

**FINDING OF NO SIGNIFICANT IMPACT  
AND FINDING OF NO PRACTICABLE ALTERNATIVE**

**ATLANTIC WHITE CEDAR RESTORATION PROJECT  
DARE COUNTY RANGE, NORTH CAROLINA**

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 United States Code (USC) 4321 to 4370h, implementing Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (CFR) 1500-1508, and 32 CFR Part 989, Environmental Impact Analysis Process, the U.S. Air Force (Air Force) assessed the potential environmental consequences associated with the restoration of 83 acres of Atlantic white cedar at the Dare County Range, Dare County, North Carolina.

The purpose of the proposed action is to regenerate Atlantic white cedar stands in degraded condition to ensure the stands are not replaced with hardwood stands. This project is needed because the results of forest inventories have indicated competition-induced mortality and declining conditions of the Atlantic white cedar stands on the Dare County Range. Atlantic white cedar is considered to be imperiled by NatureServe and the North Carolina Natural Heritage Program.

The Environmental Assessment (EA), incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with the regeneration of 83 acres of Atlantic white cedar, and provides environmental protection measures to avoid or reduce adverse environmental impacts.

The EA considers all potential impacts of Alternative A (Proposed Action) and the No-Action Alternative. The EA also considers cumulative environmental impacts with other projects at the Dare County Range.

**ALTERNATIVE A (PROPOSED ACTION)**

The proposed action would include whole tree harvesting of approximately 83 acres of standing Atlantic white cedar trees. Natural regeneration would rely on the seed bank in the forest floor, supplemented by existing unharvested seed trees (five per acre). Once Atlantic white cedar seedlings are established, wetland-approved herbicides would be used to control competing vegetation if seedling survival was at risk.

**NO-ACTION ALTERNATIVE**

Under the No-Action Alternative, the Proposed Action would not occur. The long-term effect of the No-Action Alternative would be the encroachment of red maple and sweet gum into the project area and the gradual conversion of 83 acres of Atlantic White Cedar Saturated Forest to a hardwood forest.

**SUMMARY OF FINDINGS**

The analyses of the affected environment and environmental consequences of implementing the Proposed Action presented in the EA concluded that by implementing Best Management Practices in accordance with the requirements of Section 404(f)(1) of the Clean Water Act (Silviculture Exemption) and the North Carolina Forest Practices Guidelines, as discussed in Section 4.3 of the EA, the Dare County Range would be in compliance with all terms and conditions and reporting requirements for implementation of the reasonable and prudent measures stipulated by the U.S. Army Corps of Engineers and the State of North Carolina.

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The Air Force has concluded that no significant adverse effects would result to the following resources as a result of the Proposed Action: greenhouse gases, geology, land use and coastal zone resources, noise, public health and safety, and transportation. No significant adverse cumulative impacts would result from activities associated with Alternative A (Proposed Action) when considered with past, present, or reasonably foreseeable future projects at the Dare County Range. In addition, the EA concluded that Alternative A (Proposed Action) would not affect environmental justice, socioeconomics, public services and utilities, and recreation opportunities.

The Air Force determined that implementing Alternative A (Proposed Action) would have minor, temporary impacts to the following resources:

#### **Air Quality**

Impacts to air quality resulting from the Preferred Alternative would be minor and temporary, as emissions associated with harvesting and transport of timber would only occur during the project period. Dare County and its two surrounding counties (Tyrrell and Hyde) are in attainment for all criteria pollutants. No significant impacts to air quality would be expected.

#### **Soils**

The proposed project area is comprised entirely of Pungo Muck soils. There are approximately 24,021 acres of Pungo Muck soils on the Range. The Preferred Alternative would disturb approximately 0.35 percent of the Pungo Muck soils on the Range and roughly 0.18 percent of all soils on the Range. Surrounding soil properties would be expected to remain unchanged.

#### **Water Resources**

**Wetlands:** The proposed project area would encompass approximately 83 acres of wetlands, which represents 0.18 percent of wetlands on the Range. Due to the flat terrain, the Preferred Alternative would be expected to have only minor, temporary increases in runoff and sedimentation to surrounding wetlands. The proposed project would not convert an area of the waters of the U.S. into a use to which it was not previously subject. Additionally, the proposed project would not convert a jurisdictional wetland to a non-wetland, nor would it impair the flow or circulation or reduce the reach of waters of the U.S. It is expected that the wetlands would continue to function as wetlands if the Preferred Alternative was implemented.

**Floodplains:** The proposed 83-acre project area is located entirely within the 100-year floodplain, which represents approximately 0.26 percent of the floodplains on the Range. Implementing the Preferred Alternative would not change baseline flood elevations or create development within the floodplain. The Preferred Alternative would be expected to have only negligible, if any, impacts to floodplains.

#### **Biological Resources**

**Vegetation:** Implementing the Preferred Alternative would result in a temporary reduction in forest cover by removing much of the standing Atlantic white cedar and hardwood component of the project area to facilitate Atlantic white cedar regeneration. The proposed project would temporarily reduce the Atlantic White Cedar Saturated Forest Alliance by approximately 2.7 percent, and would temporarily reduce total vegetation on the range by 0.20 percent.

**Wildlife:** Temporary displacement of wildlife from the project area would occur. Smaller, less mobile species could inadvertently be killed during harvesting activities. It is likely that most wildlife species would disperse into adjacent habitats on the Range or surrounding Alligator River National Wildlife Refuge and return to the area over time as the area regenerates. Species that utilize early successional

habitat would benefit in the short-term. Long-term impacts to wildlife populations would not be expected.

**Threatened, Endangered and Special Status Species:**

Rafinesque's eastern big-eared bat – Short-term impacts that could result from the Preferred Alternative would include a minor decrease in suitable habitat for Rafinesque's eastern big-eared bat. Any bats that may be using the proposed project area for roosting and/or foraging would likely disperse into adjacent habitats on the Range or the surrounding Alligator River National Wildlife Refuge. It is expected that this species would return to the project area once the Atlantic white cedar regenerated to a point where it would again provide suitable habitat. No long-term impacts to Rafinesque's eastern big-eared bat would be expected.

Bald eagle – Short-term impacts that could result from the Preferred Alternative would include a minor decrease in habitat for Bald eagles. Bald eagles do not nest within the Range; therefore, nest disturbance resulting from the Preferred Alternative would not occur. Due to the abundance of suitable habitat on the Range and the surrounding Alligator River National Wildlife Refuge, it is unlikely that the Preferred Alternative would have any measurable effect on Bald eagles in the area.

Black-throated green warbler – Short-term impacts that could result from implementing the Preferred Alternative would include a minor decrease in suitable habitat for black-throated green warblers. Any warblers that may occupy the proposed project area would likely disperse into adjacent habitats on the Range or surrounding Alligator River National Wildlife Refuge. It is expected that this species would return to the area once the Atlantic white cedar regenerated to a point where it would again provide suitable habitat. No long-term impacts to black-throated green warblers would be expected.

Timber rattlesnake – Short-term impacts that could result from implementing the Preferred Alternative would include a minor decrease in habitat for Timber rattlesnakes. It is possible that one or more Timber rattlesnakes could be inadvertently killed during harvesting activities. This species may use manmade clearings for various purposes during their lifecycle. No long-term impacts to Timber rattlesnakes would be expected.

**PREFERRED ALTERNATIVE**

Alternative A has been identified as the Preferred Alternative. Alternative A would include whole tree harvesting of approximately 83 acres of standing Atlantic white cedar trees. Natural regeneration would rely on existing unharvested seed trees (five per acre) and the existing seedbank in the forest floor. Once Atlantic white cedar seedlings are established, wetland-approved herbicides would be used to control competing vegetation if seedling survival was at risk.

**FINDING OF NO PRACTICABLE ALTERNATIVE**

The Dare County Range contains 180 acres of non-wetland habitat and 356 acres of lacustrine (lake) habitat. The remaining 46,083 acres (99%) of the Range are wetlands. Furthermore, Atlantic white cedar is a species that only grows in freshwater wetlands. Approximately 70 percent of the Range contains 100-year and 500-year floodplains. These low-lying areas provide the conditions necessary for Atlantic white cedar growth. Per 32 CFR §989.14(g), I find that there is no practicable alternative to implementing the Preferred Alternative within the 100-year floodplain and wetlands.

**FINDING OF NO SIGNIFICANT IMPACT**

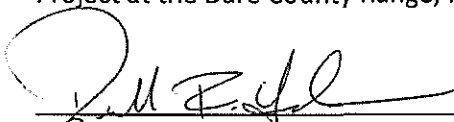
Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR Part 989, I conclude that the Preferred Alternative, *Atlantic White Cedar Restoration Project*, cumulatively with other projects at the Dare County Range, would not have a significant impact on the natural or human environment. Accordingly, an

Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact and Finding of No Practicable Alternative completes the environmental impact analysis process.

**FINDING OF NO SIGNIFICANT IMPACT and  
FINDING OF NO PRACTICABLE ALTERNATIVE**

**CONCURRENCE PAGE**

In Conjunction with the Final Environmental Assessment for the Atlantic White Cedar Regeneration Project at the Dare County Range, North Carolina



RUSSELL R. HULA, Colonel, USAF  
Deputy Director of Installations and Mission Support (A7)

23 Dec 14  
Date

**FINAL**  
**ENVIRONMENTAL ASSESSMENT**  
**FOR**  
**ATLANTIC WHITE CEDAR RESTORATION PROJECT**  
**AT**  
**DARE COUNTY RANGE,**  
**NORTH CAROLINA**



Prepared By:  
Seymour Johnson Air Force Base, North Carolina  
4th Civil Engineer Squadron  
Environmental Management Element

August 2014

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## 1. PURPOSE AND NEED FOR ACTION

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The Dare County Range (hereafter, the Range), located in northeastern North Carolina, was established in 1965 and consists of 46,621 acres. The Dare County mainland is a 186,000-acre peninsula bounded on the north by the Albemarle Sound, on the west by the Alligator River, on the east by the Croatan Sound, and on the southeast by the Pamlico Sound (Figure 1-1). Dare County is connected to the larger Albemarle-Pamlico peninsula by Hyde County, which borders Dare County to the southwest. The Range is surrounded by the 152,000-acre Alligator River National Wildlife Refuge (ARNWR). The Range is not adjacent to any major body of water although the western boundary lies within one mile of the Alligator River and the eastern boundary lies within one mile of Stumpy Point Bay, which connects to Pamlico Sound (U.S. Air Force, 2008).

The mission of the Range is to provide an all-weather inert ordnance/electronic combat weapons training range for Department of Defense and other entities. The Range complex is owned by the US Air Force and provides a bombing and gunnery facility for conducting tactical fighter pilot training for Air Force, Navy, Marine Corps, and Air National Guard units.

Atlantic white cedar (*Chamaecyparis thyoides*) is considered a subclimax species (Eyre, 1980). Even-aged stands of Atlantic white cedar often develop in response to fire, flooding, clear cutting, or windthrow (Eyre, 1980). Windthrow refers to trees uprooted or broken by wind. This tree is described as "intermediate in tolerance to shade" and is unable to grow through dense shrub thickets or a hardwood overstory (Little & Garrett, 1990). In many areas, Atlantic white cedar forests are successional to evergreen bay forests when fire is excluded (Buell & Cain, 1943; Christensen, 1981). In the Great Dismal Swamp of Virginia and North Carolina, stands are often replaced by red maple and black gum (Montague & Day, 1980).

### 1.1. PURPOSE

The purpose of the proposed action is to regenerate stands of Atlantic white cedar in degraded condition to ensure they are not replaced by hardwood stands, provide quality habitat for protected wildlife species and to sustain the presence of Atlantic white cedar on the Range.

Restoration of healthy peatland Atlantic white cedar forests is a major goal of the forest management program at the Range. A study in 1997 found that the Range possesses 21% of the remaining peatland Atlantic white cedar forests in North Carolina, the second largest ownership in the state. According to the NC Natural Heritage Program, the Peatland Atlantic white cedar in Dare County, shared by the Range and the Alligator River National Wildlife Refuge, is the largest occurrence of pure Atlantic white cedar in North Carolina. Atlantic white cedar forests are a resource considered to be imperiled by NatureServe and the North Carolina Natural Heritage Program (U.S. Air Force, 2008).

### 1.2. NEED

The need for the proposed action is to prevent stands of Atlantic white cedar from transitioning to a mixed cedar-hardwood stand, and eventually being replaced by hardwood species. Stand replacement would produce an overall decline in the number of Atlantic white cedar stands on the Range and would result in a long-term loss of habitat for wildlife.

The results of a 1999 forest inventory of the Atlantic white cedar stands (Daniels, 1999) indicated there was considerable evidence that these stands were beginning to decline in vigor and in numbers of Atlantic white cedar trees due to age-related mortality. The stands proposed for regeneration in this Environmental Assessment are approximately 110 years old. The 1999 Inventory determined the stocking for Tract 1 was approximately 424 Atlantic white cedar trees per acre and the stocking for Tract 2 was approximately 209 Atlantic white cedar trees per acre.

Results of a 2009 forest inventory (LandMark Systems, 2009) concluded that growth rates of the same Atlantic white cedar stands were decreasing. Inventory field condition notes and the number of dead Atlantic white cedar trees observed indicated competition-induced mortality and declining conditions of the Atlantic white cedar stands. The 2009 Inventory determined the stocking for Tract 1 was approximately 267 Atlantic white cedar trees per acre, a reduction of 37 percent from 1999, while the stocking for Tract 2 was approximately 162 trees per acre, a reduction of 22 percent from 1999.

### **1.3. ENVIRONMENTAL REVIEW PROCESS**

The National Environmental Policy Act (NEPA) of 1969 requires the consideration of potential environmental consequences of federal actions. Regulations for federal agency implementation of the Act were established by the President's Council on Environmental Quality (CEQ). Under NEPA, federal agencies must prepare an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) for any major federal action, except those actions that are determined to be "categorically excluded" from further analysis.

An EA is a concise public document that provides sufficient analysis for determining whether the potential environmental impacts of a proposed action are significant, resulting in the preparation of an EIS, or not significant, resulting in the preparation of a Finding of No Significant Impact (FONSI). An EIS is prepared for those federal actions that may significantly affect the quality of the human environment. Thus, if the Air Force were to determine that the proposed action would have a significant impact on the quality of the human environment, an EIS would be prepared. An EA is prepared for those federal actions that do not significantly affect the human environment and should include: brief discussions of the purpose and need for the proposal, the alternatives, the affected environment, the environmental impacts of the proposed action and alternatives, a discussion of the cumulative impacts associated with the alternatives, and a listing of agencies and persons consulted.

This EA will be reviewed by the lead agency, the Air Force, who will make a determination regarding the proposed action and whether a FONSI or an EIS is appropriate. Should the Air Force conclude that a FONSI is appropriate, a FONSI that summarizes the issues presented in this EA would be prepared. Additionally, in accordance with 32 CFR 989.14(g), a Finding of No Practicable Alternative (FONPA) must be included in the FONSI when the alternative selected could be located in wetlands or floodplains, and must discuss why no other practicable alternative exists to avoid impacts. The draft EA and draft FONSI/FONPA will be made available for a 30-day public review and comment period. Comments received will be addressed in the final documents.

The Air Force has prepared this EA in accordance with applicable federal and state regulations and instructions, as well as with other applicable laws, ordinances, rules, and policies. These include, but are not limited to the following:

- NEPA as amended by Public Law 94-52, July 3, 1975 (42 U.S.C. 4321 *et seq.*)
- Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500 to 1508)
- Air Force Environmental Impacts Analysis Process (32 CFR 989)

#### **1.4. FEDERAL, STATE OR LOCAL PERMITS, LICENSES OR OTHER CONSULTATION REQUIREMENTS**

**Coastal Zone Management Act** – Pursuant to the Coastal Zone Management Act (CZMA) (16 U.S.C. § 1451 *et seq.*, as amended, 15 CFR § 921-930), the term “coastal zone” does not include “lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government” (16 U.S.C. § 1453[1]). Although the Range is within North Carolina’s designated coastal zone, the Range is owned by the Air Force. Federal land is excluded from the definition of coastal zone, and thus exempt from North Carolina’s Coastal Management Program, provided that impacts from the actions on the federal installation do not leave the installation and affect any North Carolina coastal use or resource.

Additionally, Section 103(5)(b) of the North Carolina Coastal Area Management Act exempts from permitting requirements, “The use of any land for the purposes of planting, growing, or harvesting plants, crops, trees, or other agricultural or forestry products, including normal private road construction, raising livestock or poultry, or for other agricultural purposes except where excavation or filling affecting estuarine waters or navigable waters is involved.” A copy of the Draft EA was provided to the North Carolina Division of Coastal Management via the State Environmental Review Clearinghouse; they had no comment on the contents of the Draft EA (Appendix E).

**Eastern Band of Cherokee Indians** – The Eastern Band of Cherokee Indians (EBCI) is the only federally-recognized tribe in North Carolina. Written correspondence from the EBCI, dated 10 April 2014, confirms the tribe has no claims or interests in Dare County (Appendix A).

**Endangered Species Act Section 7 Consultation with US Fish and Wildlife Service (USFWS)** – Section 7 Consultation has been completed per the requirements of the Endangered Species Act. See Appendix B for the Biological Assessment submitted by the Air Force and the Biological Opinion provided by the USFWS.

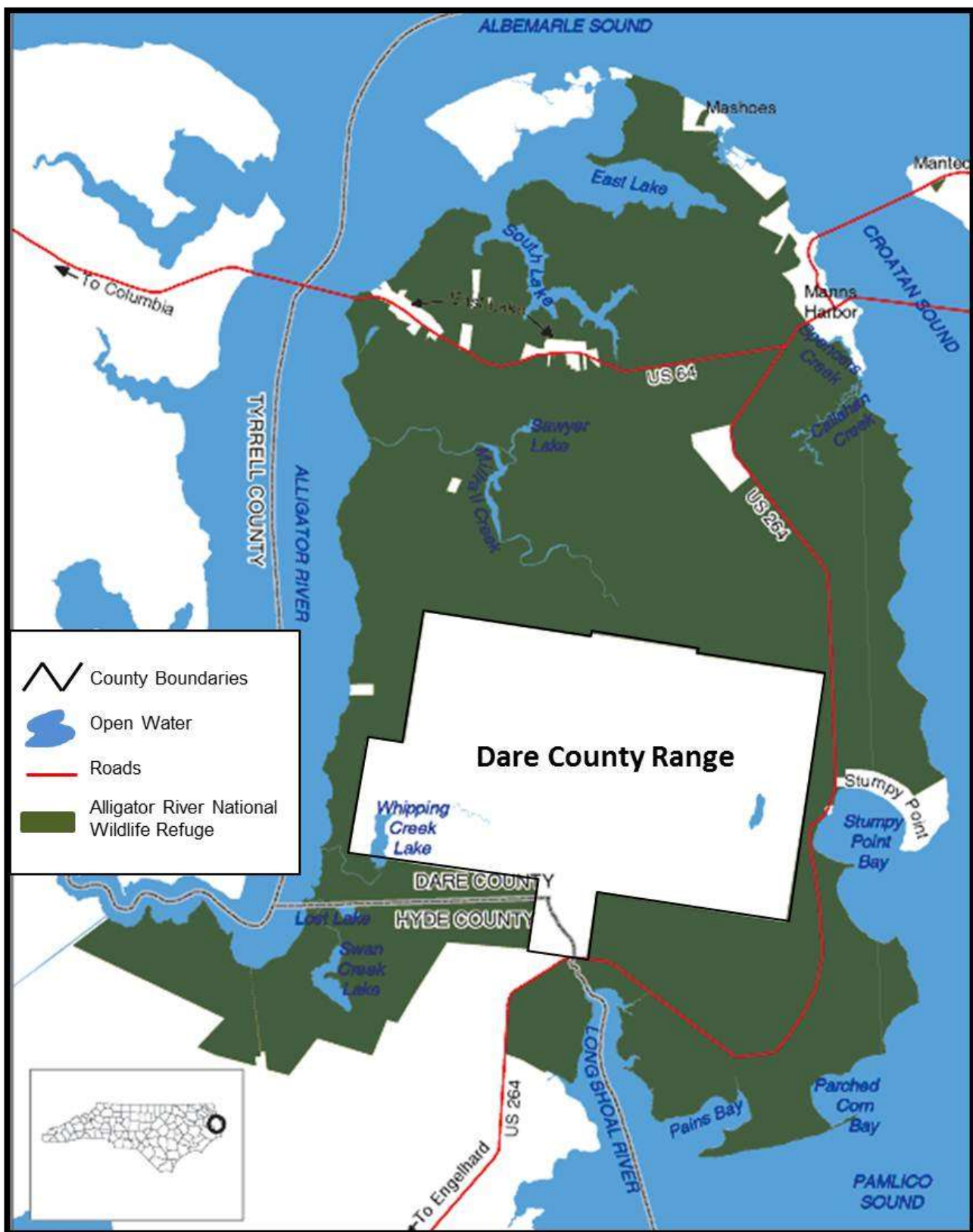
**North Carolina State Environmental Review Clearinghouse** – Multiple copies of the Draft EA were sent to the Clearinghouse for review and comment. The Clearinghouse distributed copies of the Draft EA to the following State government agencies for review and comment for a period of 30 days. All comments are provided in Appendix E.

➤ **North Carolina Department of Environment and Natural Resources (NCDENR)**

- Division of Air Quality
- Division of Environmental Assistance and Customer Service (Permit Assistance and Project Review)
- Division of Coastal Management
- Division of Land and Water Stewardship (Natural Heritage Program)

- Division of Legislative and Intergovernmental Affairs
- Division of Parks and Recreation
- Division of Waste Management
- Division of Water Resources
- **Albemarle Regional Planning Commission**
- ***NC Dept of Agriculture***
- ***NC Dept of Cultural Resources, State Historic Preservation Office***
- ***NC Dept of Public Safety, Division of Emergency Management, Floodplain Management Program***
- ***NC Department of Transportation***

Figure 1-1. The Dare County Peninsula



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## **2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

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### **2.1. NO-ACTION ALTERNATIVE**

Under the No-Action Alternative, no harvesting and regeneration of Atlantic white cedar would occur at the Range. Efforts to improve or restore Atlantic white cedar would not be completed under this alternative. These Atlantic white cedar stands would continue to decline, transition to mixed cedar-hardwood stands, and eventually be replaced by hardwood stands.

### **2.2. ALTERNATIVE A (PROPOSED ACTION)**

The proposed project would include whole tree harvesting of approximately 83 acres of standing Atlantic white cedar trees located near the western boundary of the Range at the end of Gator 4 Road (Figure 2-1). Natural regeneration would rely on the seed bank in the forest floor; supplemented by existing seed trees that would be left unharvested (five per acre). The seed trees would be approximately 10 to 12 inches in diameter at breast height with spacing of approximately 90 to 95 feet between trees.

The proposed project would be accomplished in two phases (Tract 1 and Tract 2) over the course of two consecutive years. Tract 1 would consist of approximately 50 acres and would be harvested during the first year; Tract 2 would be comprised of approximately 33 acres and would be harvested during the second year. Weather would be a major factor in determining the length of time for each of the two phases, which could last for three months or more if extreme wet weather exists.

Mechanized harvesting would be accomplished using specialized equipment and techniques for harvesting in wetlands. Logging equipment would include low ground pressure tracked feller-bunchers and skidders equipped with tracks or dual-mounted rubber tires. Atlantic white cedar is shade intolerant and requires relatively open conditions for re-establishment. Competing tree species such as red maple and sweet gum would be cut down and placed in logging trails to reduce rutting. The stumps, branches and other debris would be left in place (i.e., not burned). Harvested timber would be transported from the project site on roads traversing the Air Force impact area.

Once Atlantic white cedar seedlings are established, herbicides would be used to control competing vegetation if seedling survival was at risk. Label instructions and application rates would be strictly adhered to. Arsenal® is currently the primary herbicide used in cedar regeneration because it is approved for wetlands and is known to be effective in controlling red maple. Arsenal, however, is not approved for use in areas with standing water, so ditched areas would have to be avoided. Habitat® is a broadleaf herbicide that is approved for use in standing water and would also be considered for use.

### **2.3. METHODS CONSIDERED BUT NOT FURTHER ANALYZED**

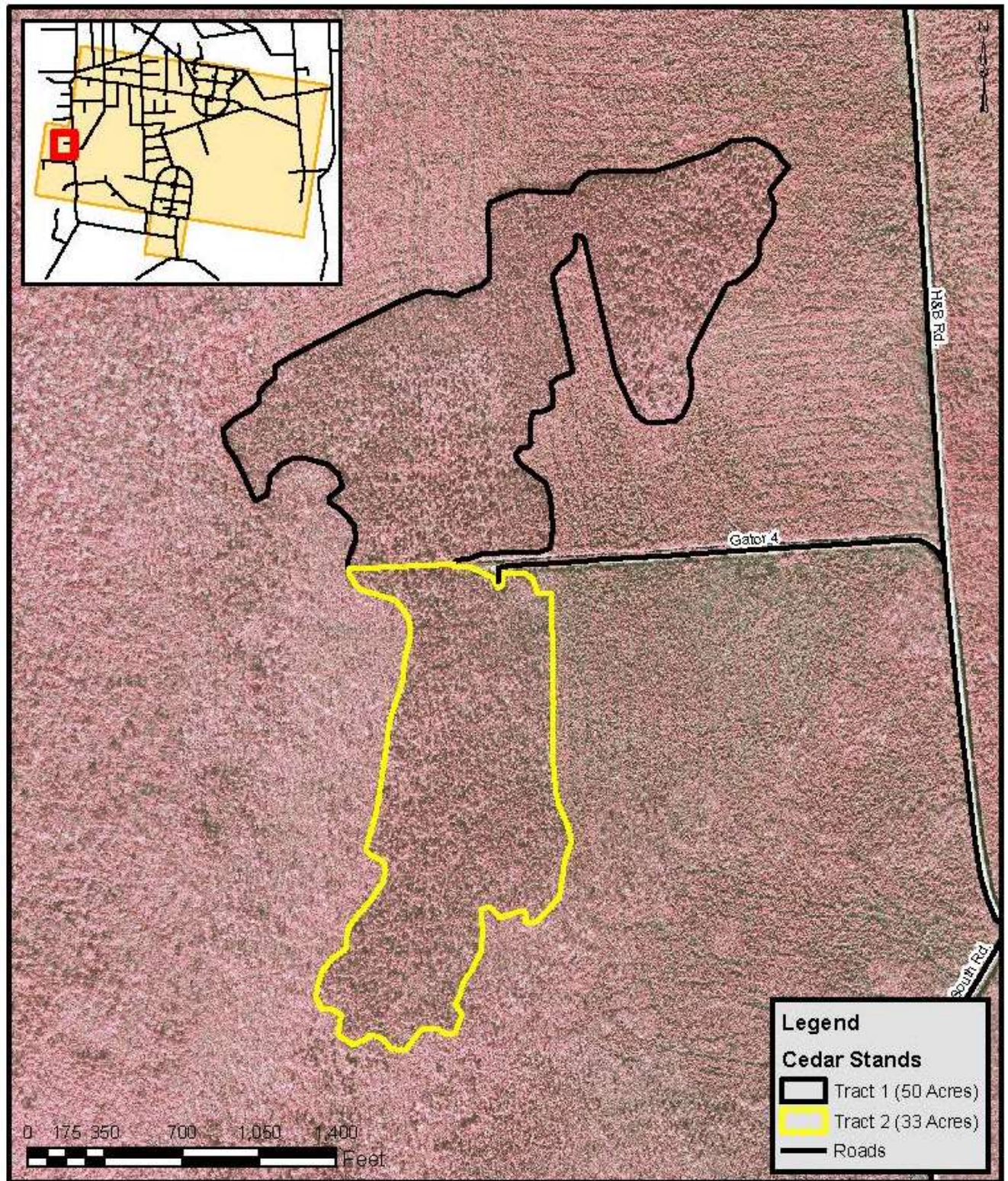
The Air Force considered harvesting the same stands of Atlantic white cedar with ground-based mechanical equipment and using helicopters to transport logs to loading decks. Due to the air combat training mission at the Range, access to the airspace for helicopters would be restricted to weekends. The restricted access to airspace would cause this alternative to be cost prohibitive.



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Figure 2-1. Location of Proposed Action





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### **3. AFFECTED ENVIRONMENT**

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This chapter describes the existing environmental conditions for resources that could potentially be affected by the alternatives described in Chapter 2.

Some resource areas have been eliminated from further discussion based on conclusions that these resources would not be impacted by the alternatives described in Chapter 2.

- **Cultural Resources and Native American Consultation** – A cultural resources survey was conducted on the Range by Panamerican Consultants, Inc. (Grover, 1996). The level of disturbance documented on the Range led researchers to conclude it is highly unlikely that any intact archaeological sites are present. No historic structures are known to exist anywhere on the Range. The North Carolina State Historic Preservation Office (SHPO) concurred with the recommendation that no further cultural resource investigations were required in a letter dated 6 August 1996 (Appendix A). The Eastern Band of Cherokee Indians (EBCI) is the only federally-recognized tribe in the state. Correspondence from the EBCI, dated 10 April 2014, confirms the tribe has no interests in Dare County (Appendix A).
- **Land Use** – The alternatives described in Chapter 2 would not change the existing land use within the Range or in the surrounding community.
- **Transportation** – Haul trucks would not use any roads on the Alligator River National Wildlife Refuge. Access for trucks into and out of the Range would be restricted to roads traversing the Air Force impact area. Off installation, trucks would use major arteries such as U.S. Highway 264.
- **Noise** – The location of the Proposed Action is underneath the flight path of incoming fighter jets using the bombing range. Additionally, there are no facilities or populations in the vicinity of the Proposed Action.
- **Geology** – The Proposed Action would not change the existing geology within the Range or in the surrounding area.
- **Groundwater** – The Yorktown Aquifer underlies portions of Dare County and ranges from approximately 330 to 660 feet below the ground (Dare County, 1992). Due to the depth, the Proposed Action would not be expected to affect groundwater.
- **Greenhouse Gases** – The Council on Environmental Quality (CEQ) recommends that if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of CO<sub>2</sub>-equivalent greenhouse gas emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. The Proposed Action would be expected to produce approximately 504 metric tons (Appendix C).
- **Public Health and Safety** – The Proposed Action would not have any impact on public health and safety within the Range or in the surrounding area.
- **Public Services and Utilities** – The Proposed Action would not have any impact on public services or utilities within the Range or in the surrounding area.
- **Recreation Opportunities** – The Proposed Action would not have any impact on recreation opportunities within the Range or in the surrounding area.
- **Socioeconomics and Environmental Justice** – The scope of the Proposed Action would be too small to impact the regional economy. No new employment opportunities would be generated; therefore, there would not be any change in the employment and personal income profile of the region. Due to the absence of low-income and/or minority populations in the vicinity of the Proposed Action, no impacts to Environmental Justice would be expected.

### **3.1. AIR QUALITY**

Air quality is defined as ambient air concentrations of specific pollutants determined by the U.S. Environmental Protection Agency (USEPA) to be of concern because of their impacts on the health and welfare of the general public and the environment. These pollutants are widespread across the United States. The primary pollutants of concern, called “criteria pollutants,” include carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), suspended particulate matter less than or equal to 10 microns in diameter (PM<sub>10</sub>), fine particulate matter less than or equal to 2.5 microns in diameter (PM<sub>2.5</sub>) and lead (Pb). Under the Clean Air Act (CAA), the USEPA has established National Ambient Air Quality Standards (NAAQS) (40 CFR § 50) for these pollutants. Areas that are and have historically been in compliance with the NAAQS are designated as attainment areas. Areas that do not meet a federal air quality standard are designated as nonattainment areas for that pollutant. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment. The NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare. Short-term standards (i.e., 1-, 3-, 8-, and 24-hour periods) are established for pollutants contributing to chronic health effects.

Air quality in a given location is described by the concentration of various pollutants in the atmosphere. A region’s air quality is influenced by many factors including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO<sub>2</sub>, Pb and some particulates are emitted directly into the atmosphere from emissions sources. Secondary pollutants, such as O<sub>3</sub>, NO<sub>2</sub> and some particulates are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes.

The Range is located in Dare County, which is an attainment area for the criteria pollutants, and is identified as part of the Northern Coastal Plain Intrastate Air Quality Control Region (defined in 40 CFR Part 81.149 and the classification can be found in 40 CFR Part 81.334). The General Conformity Rule, established under the Clean Air Act (section 176(c)(4), ensures that the actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state’s plans to meet national standards for air quality. Since Dare County is located in an attainment area, the General Conformity Rule does not apply; however, emissions of criteria pollutants associated with the Proposed Action were estimated using the Air Force’s Air Conformity Applicability Model. Estimated air impacts are discussed in Chapter 4. The State of North Carolina has been delegated authority to administer the provisions of Title V of the CAA. The National and North Carolina NAAQS are provided in Table 3-1.

**Table 3-1. National and North Carolina Ambient Air Quality Standards**

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Ozone (O <sub>3</sub> )	Primary and Secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Carbon Monoxide (CO)	Primary	8-hour	9.0 ppm	Not to exceed more than once per year
	Primary	1-hour	35 ppm	
Nitrogen Dioxide (NO <sub>2</sub> )	Primary and Secondary	Annual	53 ppb	Annual Mean
	Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
Sulfur Dioxide (SO <sub>2</sub> )	Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year
PM <sub>10</sub>	Primary and Secondary	24-hour	150 µg/m <sup>3</sup>	Not to be exceeded more than once per year on average over 3 years
PM <sub>2.5</sub>	Primary	Annual	12 µg/m <sup>3</sup>	Annual mean, averaged over 3 years
	Secondary	Annual	15 µg/m <sup>3</sup>	Annual mean, averaged over 3 years
	Primary and Secondary	24-hour	35 µg/m <sup>3</sup>	98th percentile, averaged over 3 years
Lead (Pb)	Primary and Secondary	Rolling 3 month average	1.5 µg/m <sup>3</sup>	Not to be exceeded
Sources: USEPA, 2012; NCDENR, 2012 <b>Notes:</b> ppm = parts per million by volume ppb = parts per billion by volume µg/m <sup>3</sup> = micrograms per cubic meter				

**Table 3-2. Emissions of Criteria Pollutants in Dare County, 2011**

Pollutant	Emissions (tons)
Carbon Monoxide (CO)	846,734
Nitrogen Oxides (NO <sub>x</sub> )	7,854
Volatile Organic Compounds (VOCs)	205,578
Particulate Matter (PM <sub>2.5</sub> )	66,507
Particulate Matter (PM <sub>10</sub> )	78,914
Sulfur Dioxide (SO <sub>2</sub> )	4,363
Lead (Pb)	0

Source: Air Emission Sources (USEPA, 2014)

### **3.2. SOILS**

The proposed project area consists entirely of Pungo muck soils (Figure 3-1). According to the Soil Survey of Dare County, North Carolina (USDA, 1992), Pungo muck is a nearly flat, very poorly drained soil on broad flats throughout the mainland of Dare County. The surface layer consists of highly decomposed, pastelike organic material. The seasonal high water table is at or near the surface. Wetness, flooding, and low strength are the main limitations affecting this soil.

### **3.3. WATER RESOURCES**

No natural streams or surface waters (other than wetlands which are discussed below) exist within the proposed project area. The nearest surface water is Whipping Creek, which is more than a half mile to the south and is separated from the proposed project site by Hooper Road. Whipping Creek Lake is approximately 0.7 miles to the south and the Alligator River is roughly 1.5 miles to the west. Therefore, for the purposes of this EA, the only water resources analyzed are wetlands and floodplains.

#### **3.3.1. Wetlands**

According to National Wetland Inventory data, the Range contains 180 acres of non-wetland (i.e., upland) habitat (Figure 3-2). Lake Worth and Whipping Creek Lake make up 356 acres of lacustrine (lake) habitat. The remaining 46,083 acres (99%) of the Range are wetlands. The majority of this wetland area is forested or shrub-dominated “pocosin” wetland (U.S. Air Force, 2008). As shown in Figure 3-3, the proposed project area is located on non-tidal forested wetlands.

#### **3.3.2. Floodplains**

Floodplains are low-lying areas adjacent to rivers, lakes and oceans that are periodically inundated by floodwater. The majority of the Range contains 100-year and 500-year floodplains (Figure 3-4). The proposed project area is located entirely within the 100-year floodplain.

### **3.4. BIOLOGICAL RESOURCES**

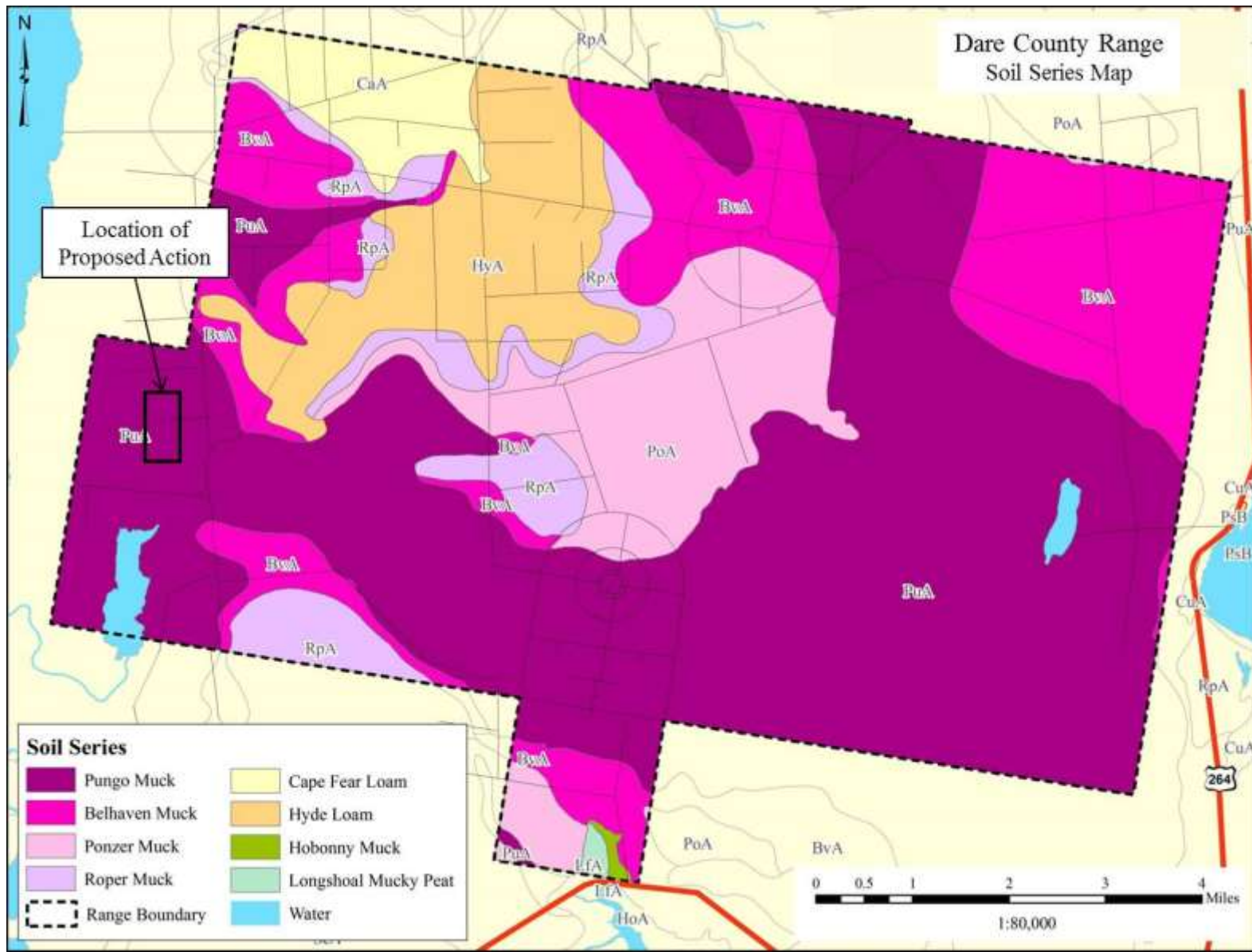
Biological resources addressed in this EA include living, native or naturalized plant and animal species and their habitats. These resources are divided into three categories, each of which is addressed below, including: vegetation, wildlife, and special status species.

#### **3.4.1. Vegetation**

There are 12 distinct vegetation alliances (Figure 3-5) covering 41,120 acres on the Range; of that, approximately 78 percent is classified as forest or woodland and the remaining 22 percent is shrubland or other vegetation (U.S. Air Force, 2008).

In 1984, the Air Force entered into a cooperative agreement with the North Carolina Natural Heritage Program to have areas containing high-quality examples of functional wetland ecosystems entered into the North Carolina Registry of Natural Heritage Areas. This agreement was revised by the Air Force in 2007 following a high-resolution ecosystem mapping project that more accurately mapped the most pristine habitat examples (Figure 3-6). The proposed project site is adjacent to the Alligator River Swamp Forest Registered Heritage Area but does not include any property included in the Registry (Figure 3-7).

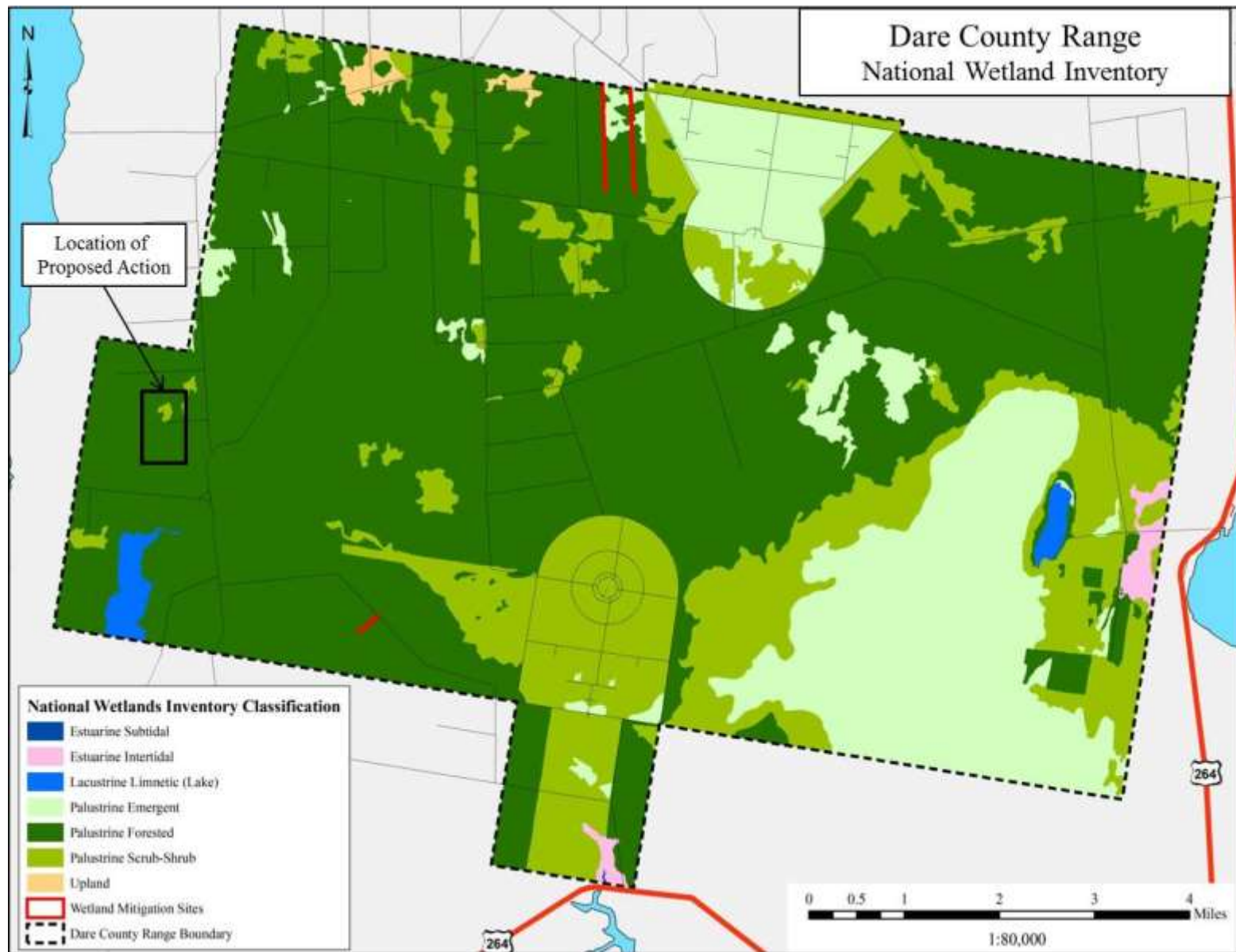
Figure 3-1. Soil Series Map for the Dare County Range





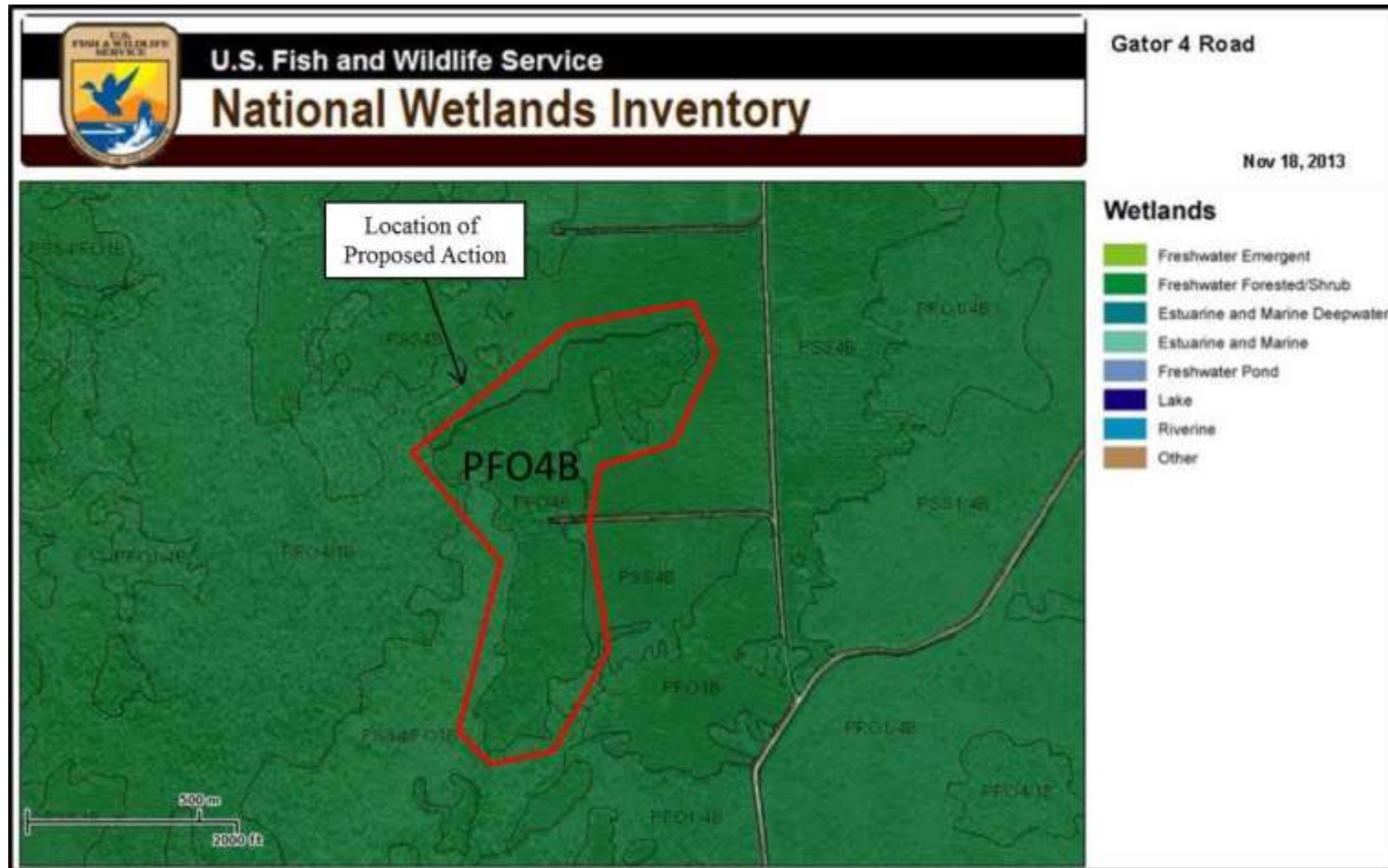
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Figure 3-2. National Wetland Inventory Map of Dare County Range



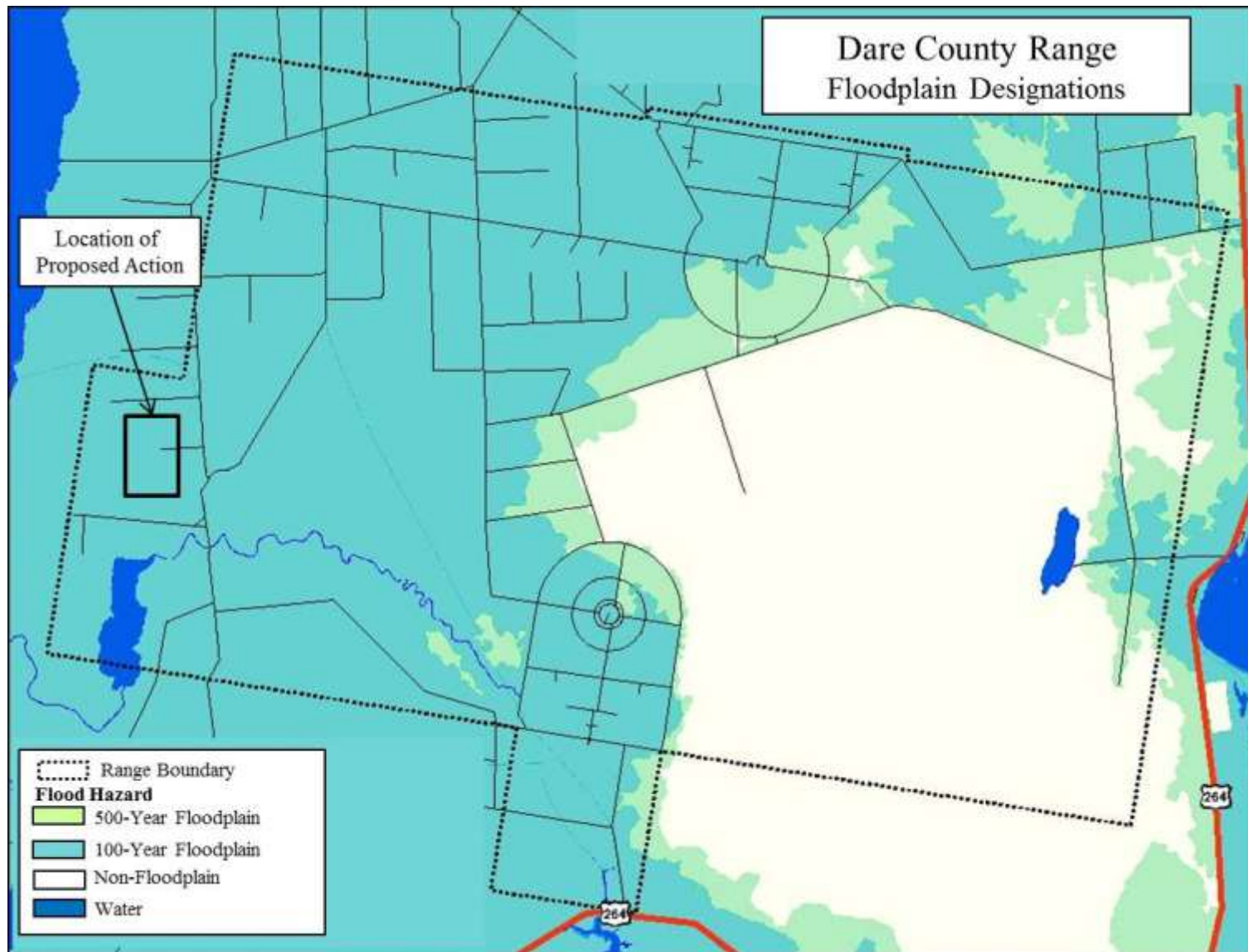
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Figure 3-3. National Wetland Inventory Map of Proposed Project Area



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**Figure 3-4. Dare County Range Floodplain Designations**



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### 3.4.2. Wildlife

Wildlife found on the Range includes fish, amphibian, invertebrate, reptile, bird, and mammal species with the exception of those identified as protected species. Protected species are discussed in Section 3.3.3. Wildlife also includes those bird species protected under the Federal Migratory Bird Treaty Act (MBTA).

Dare County is the approximate midpoint of the Atlantic Flyway (USFWS, 2008). The Atlantic Flyway is regarded as a valuable foraging and resting area for many bird species. Approximately 250 species of birds visit the Refuge regularly, with about 40 to 50 additional species considered accidental visitors. Since the Range is surrounded by the Refuge and many of the same habitats comprise both locations, many of the species associated with the Refuge are also associated with the Range. During the winter months, approximately 110 bird species can be found on the Refuge including sparrows, warblers, wading birds, woodpeckers, Bald Eagles, doves, crows, and hawks (USFWS, 2008).

The lower coastal plain of North Carolina is home to 47 species of commonly occurring mammals, with 42 of those species occurring within the Refuge (USFWS, 2008). Black bear (*Ursus americanus*), the Virginia opossum (*Didelphis virginiana*) and rodents constitute the most common mammals at the Refuge (U.S. Navy, 2011).

Three species of venomous snakes have been documented on the Range, the cottonmouth moccasin (*Agkistrodon piscivorus*), timber rattlesnake (*Crotalus horridus*) and the copperhead (*Agkistrodon contortrix*) (USFWS, 2008). A three-year study on the Range's amphibian population demonstrated that the pocosin habitat characteristics of the Range support a rich diversity of amphibians. No rare or listed amphibian species were found. A total of 14 species of frogs and toads and three species of salamanders have been observed within the Range (DoD, 2006).

### 3.4.3. Threatened, Endangered, and Special Status Species

#### Listed Species Not Affected by the Proposed Project

There are several federal and/or state listed species that occur on the Range or in the region that would not be impacted by the proposed project. A Biological Assessment was prepared by the Air Force and submitted to the U.S. Fish and Wildlife Service for review. In a Biological Opinion dated 17 January 2014, the USFWS concurred with the Air Force determination that the proposed project would not affect these species (Appendix C).

#### Red-cockaded Woodpecker (*Picoides borealis*)

The Red-cockaded Woodpecker (RCW) is an endangered species found in Southeastern U.S. old-growth pine forests. The proposed project area does not contain suitable habitat for RCW. According to USFWS guidelines, a one-half mile radius around the center of a RCW cluster provides the necessary allowance for foraging habitat. There are no RCWs or cavity trees in the vicinity of the proposed project area. The nearest known active RCW cluster is approximately 4.3 miles away and the closest proposed RCW recruitment stand is located approximately 2.4 miles from the proposed project site (Figure 3-8).



### American alligator (*Alligator mississippiensis*)

The proposed project would occur within the known range of the American alligator, which is listed as a threatened species in North Carolina. In 1977, the USFWS downlisted the alligator from endangered to threatened in part of its range, including Florida and certain coastal areas of Georgia, South Carolina, Louisiana, and Texas (42 FR 2071). In 1987, the USFWS downlisted the alligator throughout the remainder of its range to “threatened due to similarity of appearance” (52 FR 21059). This classification reflects a complete recovery of the alligator, but is intended to facilitate necessary protections for the American crocodile (*Crocodylus acutus*) in the United States and foreign countries, and other endangered crocodilians in foreign countries whose products are difficult to distinguish from those of the American alligator.

American alligators occur in marshes, slow-moving streams and manmade canals. They prefer areas where the water turbidity is low and the water quality is high, with the presence of an adequate food source (USFWS, 2008). According to the Ecosystem Survey of Dare County Air Force Range (TNC, 1994), Whipping Creek Lake has the highest density of alligators on the Range. The results also showed that alligators generally occur in very low densities on the Range and surrounding Refuge. In 1993, population estimates on the Range were 25 to 35 animals and in 1994 were 46 to 60 animals.

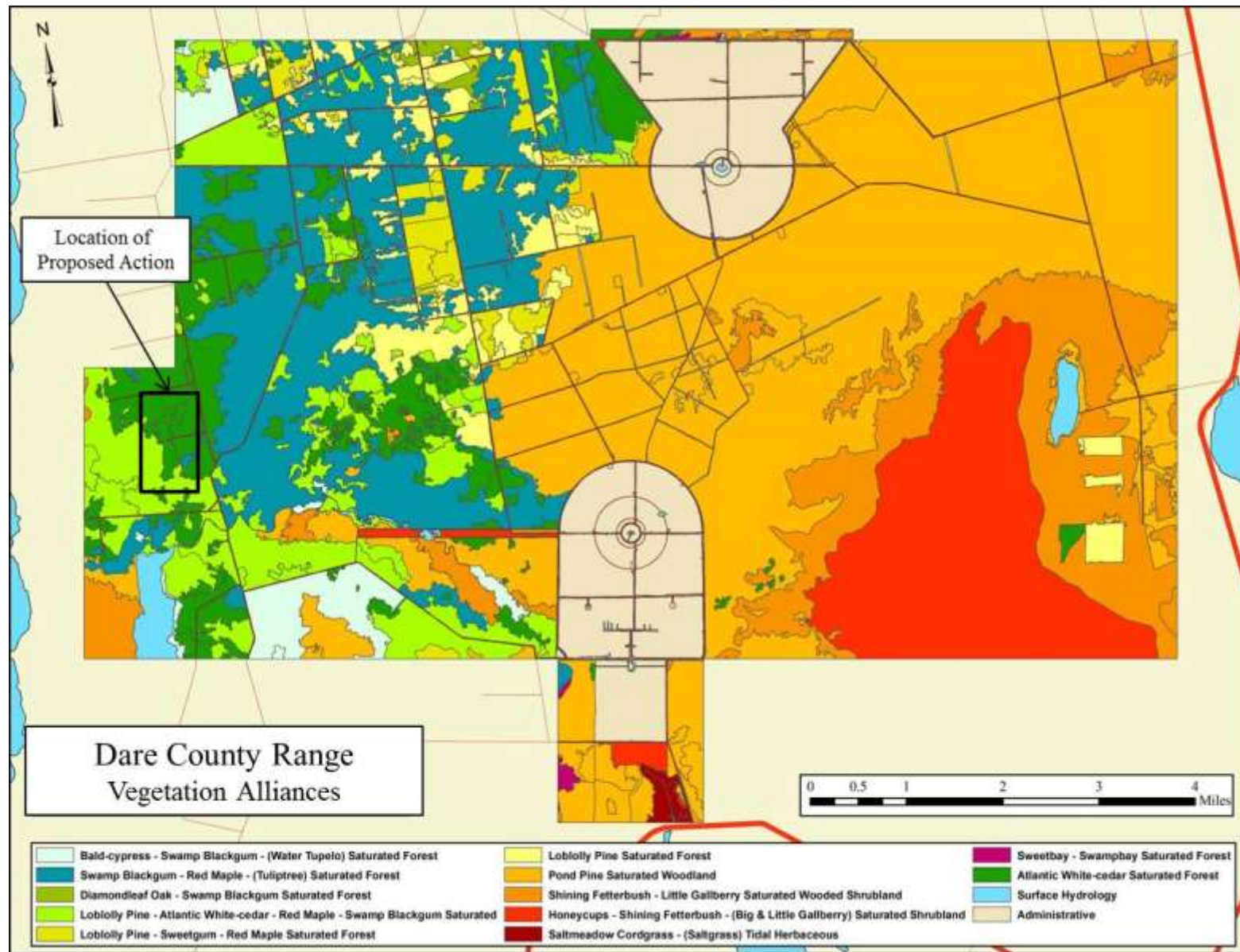
### Red wolf (*Canis rufus*)

The red wolf was listed as an endangered species in March 1967 under the Endangered Species Protection Act, the law that preceded the ESA, and protection was continued under the ESA. The red wolf was historically found throughout the southeastern states and its preferred habitat was the vast bottomland forests (U.S. Air Force, 2008).

In 1987, a captive breeding and reintroduction program established a population of red wolves in Dare County and the nearby Pocosin Lakes National Wildlife Refuge. This population is closely monitored by the U.S. Fish and Wildlife Service (USFWS) using radio collars and aerial surveillance (U.S. Air Force, 2008). The captive bred red wolves released on the Refuge have since expanded onto neighboring wildlife refuges, private land, and the Range.

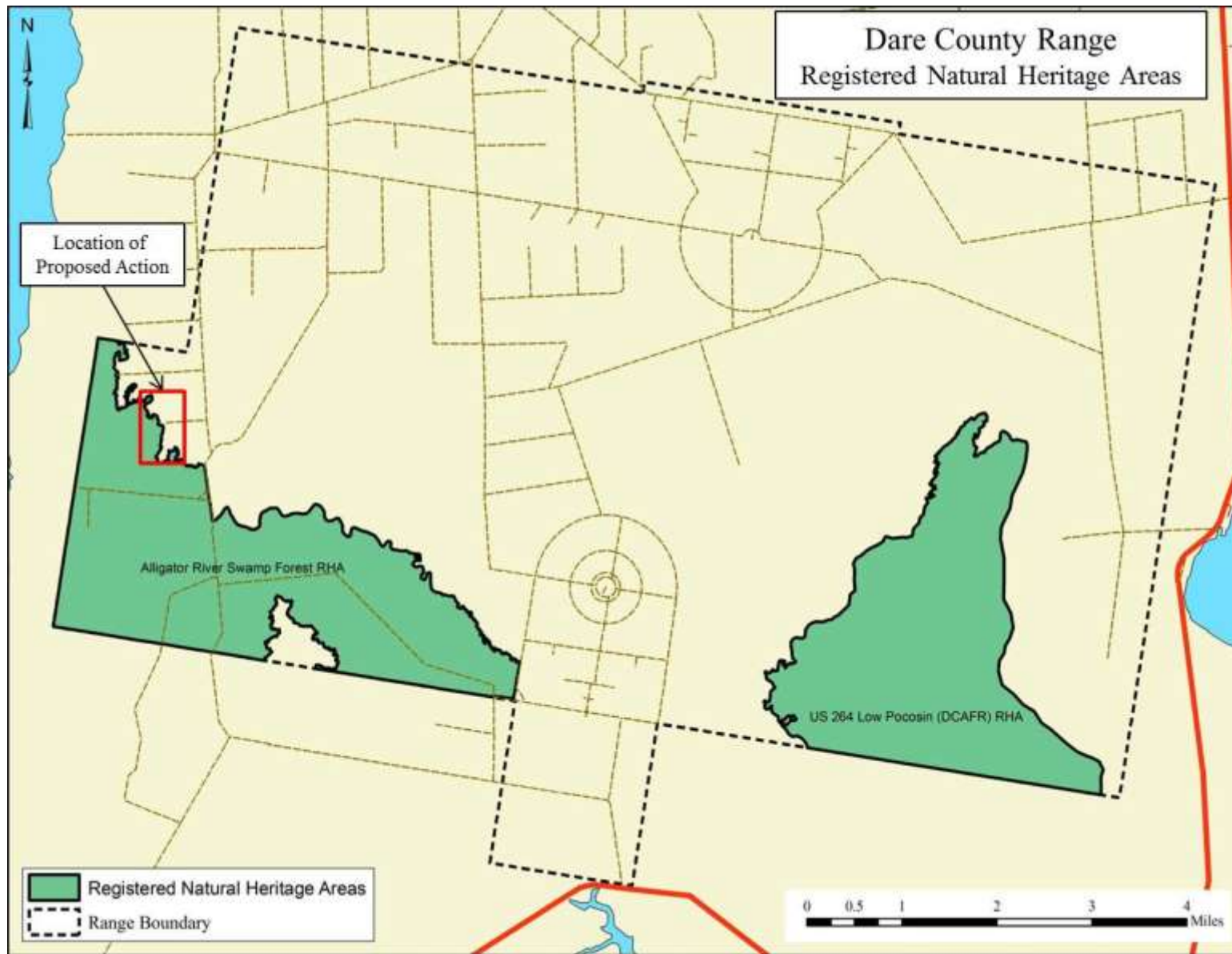
The red wolves in Dare County and adjacent Tyrrell, Hyde, and Washington Counties are considered to be a nonessential experimental population according to Section 10(j) of the ESA, although this species is listed as endangered in the rest of North Carolina. An experimental population is an introduced or designated population of endangered or threatened species that is geographically separated from another nonexperimental population. An experimental population is deemed to be “nonessential” when the loss of that experimental population would not be likely to appreciably reduce the likelihood of the survival of the species in the wild (50 CFR 17.80). Nonessential experimental populations receive the protection of threatened and endangered species only within national parks and national wildlife refuges. In areas outside of national parks and national wildlife refuges, nonessential experimental populations are treated as if they are proposed for federal listing and receive no additional protection. In these cases, Section 7(a)(1) and Section 7(a)(4) of the ESA apply. Accordingly, the Air Force has conferred as necessary under Section 7(a)(4) to meet its ESA obligations for the red wolf since the Range is not located in a national park or a national wildlife refuge.

**Figure 3-5. Vegetation Alliances on the Dare County Range**



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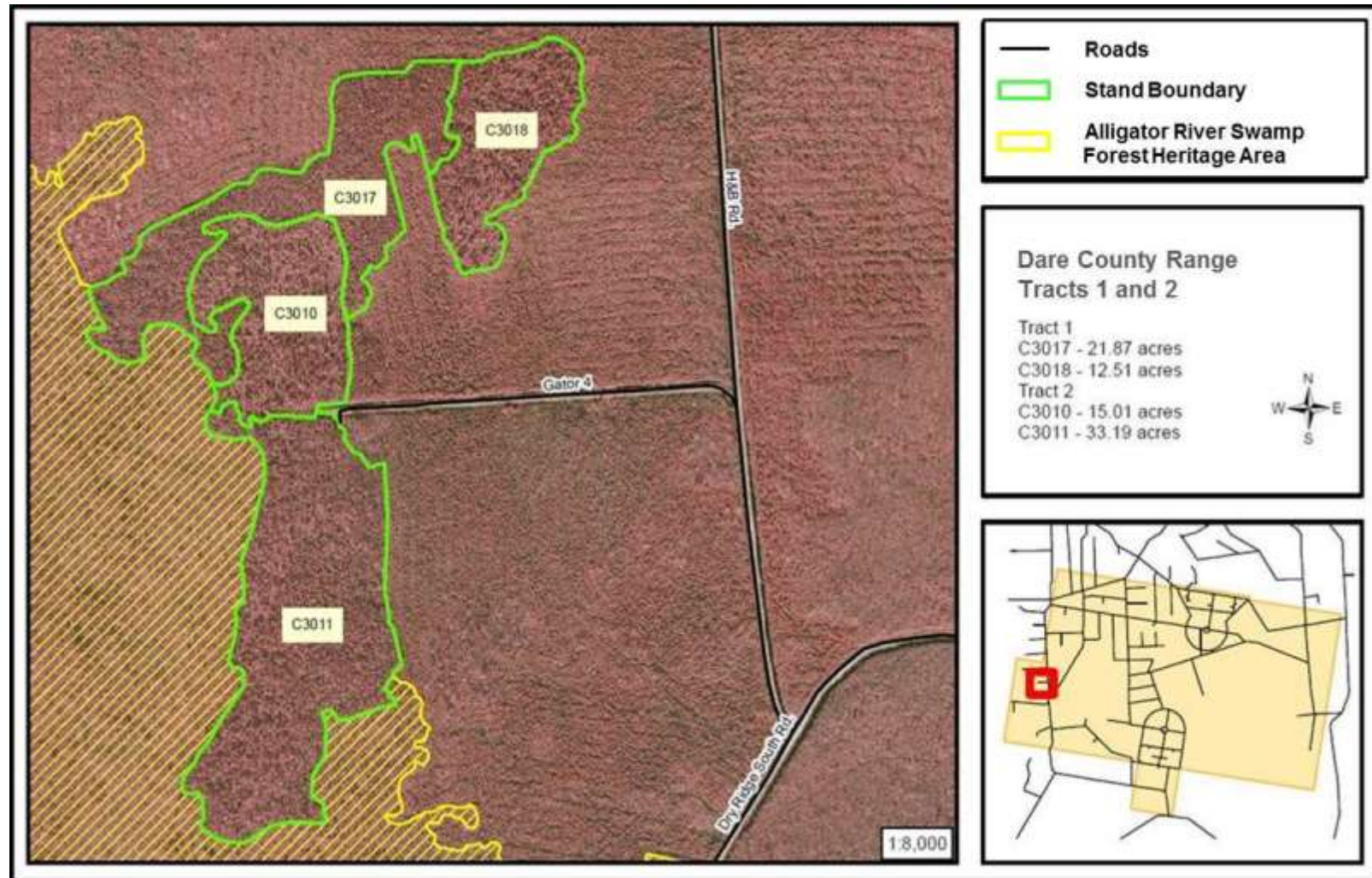
Figure 3-6. Registered Natural Heritage Areas on the Dare County Range



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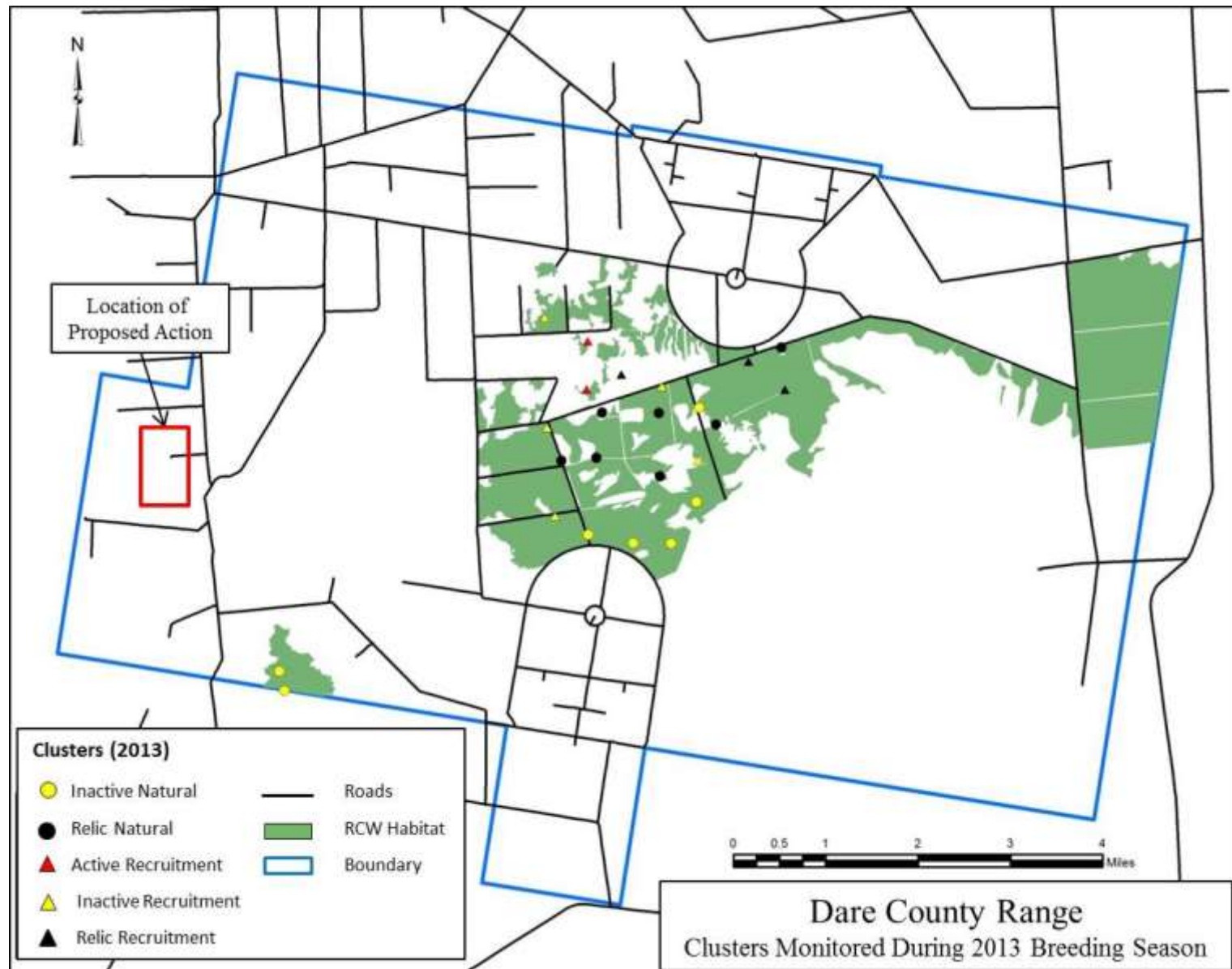


Figure 3-7. Proposed Project Site and Natural Heritage Area Boundary



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**Figure 3-8. Red-cockaded Woodpecker Clusters 2013**





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Other species listed in Dare County that would not be affected by the Proposed Action, and therefore have been dismissed from further discussion, include the Roseate Tern, Piping Plover, manatee, sea turtle, and shortnose sturgeon.

### Listed Species Potentially Affected by the Proposed Project

Federally threatened and endangered species are those listed for protection under the Federal Endangered Species Act (ESA) (16 U.S.C. 1536), administered by the U.S. Fish and Wildlife Service (USFWS). The USFWS also lists federal species of concern. Federal species of concern is an informal term that indicates species might be in need of conservation actions. Federal species of concern do not receive legal protection and this term does not imply the species will eventually be proposed for listing (USFWS, 2013).

Table 3-2 lists the federal and state listed species that have the potential to occur in the proposed project area. Each of these species is discussed following the table.

**Table 3-3. Federal and State Listed Species Potentially Occurring in the Proposed Project Area**

COMMON NAME	SCIENTIFIC NAME	STATE STATUS	FEDERAL STATUS
<b>MAMMALS</b>			
<b>Rafinesque's Eastern Big-eared Bat</b>	<i>Corynorhinus rafinesquii macrotis</i>	Special Concern	Federal Species of Concern
<b>BIRDS</b>			
<b>Bald Eagle</b>	<i>Haliaeetus leucocephalus</i>	Threatened	---
<b>Black-throated Green Warbler</b>	<i>Dendroica virens waynei</i>	Significantly Rare	Federal Species of Concern
<b>REPTILES</b>			
<b>timber (canebrake) rattlesnake</b>	<i>Crotalus horridus</i>	Special Concern	---

#### Rafinesque's eastern big-eared bat (*Corynorhinus rafinesquii macrotis*)

Rafinesque's Eastern Big-eared Bat is a species of special concern in North Carolina and a Federal Species of Concern.

The coastal plain subspecies of Rafinesque's Eastern Big-eared Bats range from North Carolina southward along the entire coastal plain and into the sandhills of South Carolina. Coastal zone habitat for roosting and foraging includes black gum (*Nyssa sylvatica*) stands, bald cypress (*Taxodium distichum*) swamp forests, maritime forests, and mature forested (hardwood or mixed) bottomlands (Clark, Black, & Kiser, 1998). In North Carolina and Virginia, foraging habitat for subspecies *macrotis* is mature hardwood floodplain forest; sites along permanent water bodies, especially rivers, are preferred (Clark M. K., 1987).

### Black-throated Green Warbler (*Dendroica virens waynei*)

The Black-throated Green Warbler is listed as a Federal Species of Concern, and is classified as significantly rare in North Carolina. In 1972, the Black-throated Green Warbler became protected under the MBTA.

In southern Virginia and coastal North Carolina, Black-throated Green Warblers are closely associated with Atlantic white cedar. Where cedar is scarce or absent, these birds are found primarily in non-alluvial forested wetlands or transitional zones between upland and wetland, where it uses blackgum (*Nyssa sylvatica*), laurel oak (*Quercus laurifolia*), sweetgum (*Liquidambar styraciflua*), bald cypress (*T. distichum*) “wet” loblolly pine (*Pinus taeda*) and red maple (*Acer rubrum*) (Watts & Paxton, 2002). On the surrounding Alligator River National Wildlife Refuge, Black-throated Green Warblers utilize the transition areas between Atlantic white cedar and pond pine stands (USFWS, 2008).

The Center for Conservation Biology established a network of 265 survey plots within Virginia and North Carolina that spanned the gradient of forest types within the region to examine breeding density, habitat use and distribution. Birds were detected on 13% of 1,862 surveys conducted. The Dare County Range and Alligator National Wildlife Refuge appear to be among the remaining strongholds for the Wayne’s form. Plots containing Atlantic white cedar, bald cypress, and/or loblolly pines were more likely to support birds than sites dominated by hardwoods (Center for Conservation Biology, 2009).

### Bald Eagle (*Haliaeetus leucocephalus*)

The Bald Eagle is listed as a Threatened species in North Carolina.

In May 2007, the USFWS issued a set of National Bald Eagle Management Guidelines (USFWS, 2007) providing landowners and others with guidance on how to ensure that actions taken on private property are consistent with the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (MBTA), both of which protect Bald Eagles by prohibiting killing, selling or otherwise harming eagles, their nests or eggs (USFWS, 2007). A modification to the definition of “disturb,” a term specifically prohibited as a “take” by the Bald and Golden Eagle Protection Act was implemented on July 5, 2007 (72 FR 31132, June 5, 2007). The revised definition defines “disturb” as “to agitate or bother a Bald or Golden Eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or; (3) nest abandonment, by substantially interfering with normal breeding, feeding or sheltering behavior (72 FR 31132, June 5, 2007).

The Bald Eagle requires old-growth and mature stands of coniferous or hardwood trees for perching, roosting and nesting. Selected trees must have good visibility, an open structure and proximity to prey, but the height or species of tree is not as important as an abundance of comparatively large trees surrounding the body of water. Forests used for nesting should have a canopy cover of no more than 60 percent, and no less than 20 percent, and be in close proximity to water (USDA, 2013).

At the Alligator River National Wildlife Refuge, eagle nesting has been documented near the North Twiford Farm Unit and near Swan Creek Lake on the south end of the refuge. Mature Bald Eagles have been observed adjacent to Stumpy Point Bay and nesting is suspected.

Another possible eagle nest may be located at the mouth of Laurel Bay Lake (Figure 3-9). Immature Bald Eagles and adults are occasionally seen within the Range (USFWS, 2008).

**Figure 3-9. Approximate Locations of Bald Eagle Nest Sites in Vicinity of Proposed Project Area**



#### Timber (Canebrake) rattlesnake (*Crotalus horridus*)

The timber, or canebrake, rattlesnake is a species of special concern in North Carolina.

In North Carolina, timber rattlesnakes are most common in the mountains and Coastal Plain. They have disappeared from most of the Piedmont due to agriculture and development. Timber rattlesnakes inhabit forested areas, and in the mountains, they will often hibernate together in large numbers (Davidson Herpetology, 2013).

Timber rattlesnakes in southeastern Virginia prefer mature hardwood and mixed hardwood-pine forests, forested cane thickets and ridges adjacent to swampy areas. Hardwood forests along riverine corridors often harbor canebrakes. Savitzky and Petersen (2004) found canebrakes were located most frequently in deciduous forest (77% of observations); only 13% of observations occurred in pine forests, and another 8% occurred in clearcuts. On occasion, individuals will occupy agricultural fields and other less optimal habitats (VDGIF, 2011).

Timber rattlesnakes often use agricultural fields and clearcuts for purposes that require an elevated body temperature such as gestation, digestion, shedding, and courtship. However, these types of manmade clearings lack woody debris on the ground and typically increase exposure to predators. Although clearcuts do provide large amounts of woody debris, they do not provide sufficient cover from predators or habitat for their primary prey, gray squirrels (VDGIF, 2011).

## 4. ENVIRONMENTAL CONSEQUENCES

Chapter 4 presents an analysis of the potential impacts upon various components of the environment that could result from the proposed action and alternatives. This chapter is arranged in the same manner as Chapter 3. Alternative A has been identified as the Preferred Alternative.

### 4.1. AIR QUALITY

#### No-Action Alternative

Under the No-Action Alternative, the proposed Atlantic white cedar regeneration project would not occur. Baseline air quality would not be impacted by the No-Action Alternative; therefore, no impacts to air quality would result from the No-Action Alternative.

#### Alternative A, Preferred Alternative

The Proposed Action would involve the use of heavy equipment and tractor trailers. Harvesting equipment would be anticipated to operate for eight hours per day, five days per week. One tractor trailer would be anticipated to drive up to 270 miles (round trip) each day to the lumber mill in Gatesville, NC, approximately five days per week. Dust emissions would be expected during harvesting activities and during transport of timber as vehicles traverse the unpaved (gravel) portion of the Range throughout the duration of the project. No dust emissions would occur from transit along paved roads. It is anticipated that any dust emissions would be temporary and settle within the perimeter of the Range and not reach the nearest human settlements (Stumpy Point, approximately seven miles east and Engelhard, approximately 15 miles south). Table 4-1 depicts the total emissions that would be anticipated as a result of proposed activities as compared with the emissions for Dare County in 2011. The emissions associated with harvesting and transport would only occur during the project period. Detailed emissions calculations are included in Appendix D of this EA.

**Table 4-1. Estimated Air Emissions for Tract 1 and Tract 2**

<b>Pollutant</b>	<b>Tract 1 Total Emissions (tons/year)</b>	<b>Tract 2 Total Emissions (tons/year)</b>	<b>Total Project Emissions (tons/year)</b>	<b>Dare County 2011 Emissions (tons)</b>	<b>Project Emissions as a Percentage of Dare County Emissions</b>
<b>NO<sub>x</sub></b>	1.747	1.574	<b>3.321</b>	7,854	0.042
<b>CO</b>	0.967	0.920	<b>1.887</b>	846,734	0.0002
<b>VOC</b>	0.227	0.211	<b>0.438</b>	205,578	0.0002
<b>PM<sub>10</sub></b>	32.218	21.282	<b>53.500</b>	78,914	0.068
<b>PM<sub>2.5</sub></b>	0.074	0.066	<b>0.140</b>	66,507	0.0002
<b>SO<sub>x</sub></b>	0.003	0.003	<b>0.006</b>	4,363	0.0001
<b>Pb</b>	0.000	0.000	<b>0.000</b>	0	0

**Sources:** Air Force Air Conformity Applicability Model, Version 5.0.0b; Air Emission Sources (USEPA, 2014)

Air emissions would be minor and temporary. Dare County and its two surrounding counties (Tyrrell and Hyde) are in attainment for all criteria pollutants. Since Dare County is located in an attainment area, the General Conformity Rule (this rule only applies for federal actions in nonattainment or maintenance areas) does not apply. Additionally, estimated emissions from the Proposed Action are well below the General Conformity Rule's de minimis levels (the minimum threshold for which a conformity determination must be performed), which are set at 100 tons per year for each pollutant listed in Table 4-1. Therefore, no significant impacts to air quality would be expected as a result of implementing the Proposed Action.

## **4.2. SOILS**

### **No-Action Alternative**

Under the No-Action Alternative, the proposed Atlantic white cedar regeneration project would not occur. There would be no impacts to soils resulting from the No-Action Alternative.

### **Alternative A, Preferred Alternative**

Soil disturbance caused by mechanical harvesting activities would be the primary source of direct effects to the soil. The use of traditional logging equipment is not feasible because it would sink into the soils; therefore, specialized low ground pressure machinery equipped with wide tracks and high flotation rubber tires would be used during harvest operations. These vehicles are designed to reduce contact pressure to avoid sinking in on soft ground. Additionally, competing tree species, such as red maple and sweet gum, would be cut down and placed in logging trails to provide support for felling and processing equipment.

There are approximately 24,021 acres of Pungo Muck soils on the Range (U.S. Air Force, 2008). The proposed project area is comprised entirely of Pungo Muck soils. The Preferred Alternative would disturb approximately 0.35 percent of the Pungo Muck soils on the Range and roughly 0.18 percent of all soils on the Range. Surrounding soil properties would be expected to remain unchanged.

The land surface on the Range is low and relatively flat, with elevations generally less than five feet above Mean Sea Level (MSL). Due to the flat terrain, soil erosion resulting from storm water runoff would be temporary and minor. Upon completion of the proposed project, early successional vegetation would become established and stabilize disturbed soils. No prime farmland soils, statewide important soils or unique soils are present within the project area.

Based on the discussion above, impacts to soils resulting from the Preferred Alternative would not be significant.

### **4.3. WATER RESOURCES**

Section 404 of the Clean Water Act (CWA) requires approval prior to discharging dredged or fill material into the waters of the United States or adjacent wetlands. Typically, normal agriculture and silviculture activities are exempt from the permit requirements of Section 404. Section 404(f)(1) lists activities that are exempt from CWA permit requirements and includes two activity types commonly practiced in forest management:

- Normal farming, silviculture, and ranching activities
- Construction or maintenance of farm roads or forest roads

To retain the silviculture exemption, the regulations require that forestry operators: (1) must not convert an area of the waters of the US into a use to which it was not previously subject; (2) must conduct all forestry operations in a manner that does not result in the immediate or gradual conversion of a jurisdictional wetland to a non-wetland, and does not impair the flow or circulation or reduce the reach of waters of the U.S.; and (3) must comply with all Best Management Practices required by regulation for the specific activity (NC Forest Service, 2012).

In North Carolina, the Forest Practices Guidelines (FPGs) are mandatory, statewide requirements defined by N.C. Administrative Code 15A NCAC 01I .0100 - .0209. All forestry-related, site-disturbing activities must comply with the FPGs if that activity is to remain exempt from permitting and other requirements specified in the North Carolina Sedimentation Pollution Control Act (SPCA) of 1973 (NC Forest Service, 2012).

According to the North Carolina Division of Coastal Management (NCDQM, 2008), "Section 103(5)(b) of the Coastal Area Management Act exempts the following activities from permitting requirements:

- agricultural or forestry production that doesn't involve the excavation or filling of estuarine or navigable waters or coastal marshland;
- agricultural or forestry ditches less than 6 feet wide and 4 feet deep."

#### **4.3.1. Wetlands**

##### **No-Action Alternative**

Under the No-Action Alternative, the proposed Atlantic white cedar regeneration project would not occur. There would be no impacts to wetlands resulting from the No-Action Alternative.

##### **Alternative A, Preferred Alternative**

There are approximately 46,083 acres of wetlands on the Range (U.S. Air Force, 2008). The proposed project area would encompass approximately 83 acres of wetlands, which represents 0.18 percent of wetlands on the Range. The use of traditional logging equipment is not feasible because it would sink into the soils; therefore, specialized low ground pressure machinery equipped with wide tracks and high flotation rubber tires would be used during harvest operations. These vehicles are designed to reduce contact pressure to avoid sinking in on soft ground.

The land surface on the Range is low and relatively flat, with elevations generally less than five feet above Mean Sea Level. Due to the flat terrain, the Preferred Alternative would be expected to have only minor, temporary increases in runoff and sedimentation to surrounding wetlands.



All wetland protection practices would be implemented during harvest operations to ensure the silviculture permit exemption is maintained. The proposed project would not convert an area of the waters of the U.S. into a use to which it was not previously subject. Additionally, the proposed project would not convert a jurisdictional wetland to a non-wetland, nor would it impair the flow or circulation or reduce the reach of waters of the U.S. It is expected that the wetlands would continue to function as wetlands if the Preferred Alternative was implemented.

Based on the discussion above, impacts to wetlands resulting from the Preferred Alternative would not be significant.

#### **4.3.2. Floodplains**

##### **No-Action Alternative**

Under the No-Action Alternative, the proposed Atlantic white cedar regeneration project would not occur. There would be no impacts to floodplains resulting from the No-Action Alternative.

##### **Alternative A, Preferred Alternative**

Roughly 32,000 acres, or about 70 percent of the Range, fall within designated floodplains. The proposed 83-acre project area is located entirely within the 100-year floodplain, which represents approximately 0.26 percent of the floodplains on the Range. Implementing the Preferred Alternative would not change baseline flood elevations or create development within the floodplain. The Preferred Alternative would be expected to have only negligible, if any, impacts to floodplains.

Based on the discussion above, impacts to floodplains resulting from the Preferred Alternative would not be significant.

### **4.4. BIOLOGICAL RESOURCES**

#### **4.4.1. Vegetation**

##### **No-Action Alternative**

Under the No-Action Alternative, the proposed Atlantic white cedar regeneration project would not occur. The long-term effects of the No-Action Alternative would be the encroachment of red maple and sweet gum into the project area, gradual transition of the 83 acres of Atlantic White Cedar Saturated Forest to a mixed cedar-hardwood forest, and conversion to a hardwood forest.

##### **Alternative A, Preferred Alternative**

There are 12 distinct vegetation alliances covering 41,120 acres on the Range; of that, approximately 78 percent is forest or woodland and the remaining 22 percent is shrubland or other vegetation (U.S. Air Force, 2008). The Atlantic White Cedar Saturated Forest Alliance on the Range is comprised of 3,061 acres (U.S. Air Force, 2008). Implementing the Preferred Alternative would result in a temporary reduction in forest cover by removing much of the standing Atlantic white cedar and hardwood component of the project area to facilitate Atlantic white cedar regeneration. The proposed project would temporarily reduce the Atlantic White Cedar Saturated Forest Alliance by approximately 2.7 percent, and would temporarily reduce

total vegetation on the range by 0.20 percent. Long-term impacts resulting from the regeneration of 83 acres of Atlantic white cedar would be beneficial for this vegetation alliance.

Based on the discussion above, impacts to vegetation resulting from the Preferred Alternative would not be significant.

#### **4.4.2. Wildlife**

##### **No-Action Alternative**

Under the No-Action Alternative, the proposed Atlantic white cedar regeneration project would not occur. The gradual conversion of Atlantic white cedar to hardwood may result in minor changes in the composition of wildlife utilizing the area; however, with the proposed project area representing only 2.7 percent of the Atlantic White Cedar Saturated Forest Alliance and only 0.26 percent of all forested habitats on the Range, impacts to wildlife resulting from the No-Action Alternative would likely be insignificant.

The No-Action Alternative would not have a significant adverse effect on migratory bird populations as defined by MBTA regulations applicable to military readiness activities. In accordance with the Bald and Golden Eagles Protection Act, the No-Action Alternative would have no impact on Bald Eagles.

##### **Alternative A, Preferred Alternative**

Atlantic white cedar stands are used in conjunction with other habitats by a variety of species for foraging, breeding, and roosting. The proposed project would temporarily reduce the amount of Atlantic White Cedar Saturated Forest on the Range by 2.7 percent, and would reduce overall forest/woodland cover by about 0.26 percent. Temporary displacement of wildlife from the project area would occur. Smaller, less mobile species could inadvertently be killed during harvesting activities. It is likely that most wildlife species would disperse into adjacent habitats on the Range or surrounding Alligator River National Wildlife Refuge and return to the area over time as the area regenerates. Species that utilize early successional habitat would benefit in the short-term. Long-term impacts to wildlife populations would not be expected.

Most of the bird species found in Dare County fall under the jurisdiction of the Migratory Bird Treaty Act (MBTA). Tree harvesting would be monitored by the Range Forester and would occur after the maternal roosting season and migratory bird nesting season to minimize impacts. The Preferred Alternative would not diminish the capacity of a population of any migratory bird species occurring on the Range to maintain genetic diversity, to reproduce and to function effectively in its native ecosystem. The proposed action would not have a significant adverse effect on migratory bird populations as defined by the MBTA. As a result, and in accordance with 50 CFR Part 21, the Air Force is not required to confer with the USFWS on the development and implementation of conservation measures to minimize or mitigate adverse effects to migratory birds.

Based on the discussion above, impacts to wildlife resulting from the Preferred Alternative would not be significant.

#### 4.4.3. Threatened, Endangered, and Special Status Species

##### No-Action Alternative

Under the No-Action Alternative, the proposed Atlantic white cedar regeneration project would not occur. Changes to habitat supporting threatened, endangered or special status species would be negligible. There would be no resulting direct, indirect, or cumulative impacts to threatened, endangered or special status species.

##### Alternative A, Preferred Alternative

##### Rafinesque's Eastern Big-eared Bat (*Corynorhinus rafinesquii macrotis*)

Rafinesque's Eastern Big-eared Bat is a species of special concern in North Carolina and a Federal Species of Concern.

Coastal zone habitat of Rafinesque's Eastern Big-eared Bat for roosting and foraging includes black gum (*Nyssa sylvatica*) stands, bald cypress (*Taxodium distichum*) swamp forests, maritime forests, and mature forested (hardwood or mixed) bottomlands (Clark, Black, & Kiser, 1998).

Table 4-2 lists the vegetation alliances and corresponding acreages that are potentially used by Rafinesque's Eastern Big-eared Bat on the Range. The table also shows the total existing suitable habitat available, the percent reduction in suitable habitat that would result from implementing the Preferred Alternative, and the percentage of suitable habitat that would remain.

**Table 4-2. Suitable Habitat for Rafinesque's Eastern Big-eared Bat on the Range**

<b>Vegetation Alliance Name</b>	<b>Acres</b>
<b>Atlantic White Cedar Saturated Forest</b> <i>Chamaecyparis thyoides</i>	3,061
<b>Bald Cypress—Swamp Blackgum—(Water Tupelo) Saturated Forest</b> <i>Taxodium distichum</i> — <i>Nyssa sylvatica</i> var. <i>biflora</i> —( <i>Nyssa aquatic</i> )	920
<b>Laurel Oak—Swamp Blackgum Saturated Forest</b> <i>Quercus laurifolia</i> — <i>Nyssa sylvatica</i> var. <i>biflora</i>	124
<b>Loblolly Pine—Atlantic White Cedar—Red Maple—Swamp Blackgum Saturated Forest</b> <i>Pinus taeda</i> — <i>Chamaecyparis thyoides</i> — <i>Acer rubrum</i> — <i>Nyssa sylvatica</i> var. <i>biflora</i>	3,441
<b>Loblolly Pine—Sweetgum—Red Maple Saturated Forest</b> <i>Pinus taeda</i> — <i>Liquidambar styraciflua</i> — <i>Acer rubrum</i>	840
<b>Loblolly Pine Saturated Forest</b> <i>Pinus taeda</i>	1,691
<b>Pond Pine Saturated Woodland</b> <i>Pinus serotina</i>	15,664
<b>Swamp Blackgum—Red Maple—(Tuliptree) Saturated Forest</b> <i>Nyssa sylvatica</i> var. <i>biflora</i> — <i>Acer rubrum</i> —( <i>Liriodendron tulipifera</i> )	6,497
<b>Sweetbay—Swampbay Saturated Forest</b> <i>Magnolia virginiana</i> — <i>Persea palstris</i>	54
<b>Total Existing Suitable Habitat</b>	<b>32,292</b>
<b>Total Minus 83 Acres from Preferred Alternative</b>	<b>32,209</b>
<b>Percent Temporary Decrease in Suitable Habitat from Preferred Alternative</b>	<b>0.26%</b>
<b>Percent Suitable Habitat Remaining</b>	<b>99.74%</b>

Short-term impacts that could result from the Preferred Alternative would include a minor decrease in suitable habitat for Rafinesque's Eastern Big-eared Bat. Any bats that may be using the proposed project area for roosting and/or foraging would likely disperse into adjacent habitats on the Range or the surrounding Alligator River National Wildlife Refuge. It is expected that this species would return to the project area once the Atlantic white cedar regenerated to a point where it would again provide suitable habitat. No long-term adverse impacts to Rafinesque's Eastern Big-eared Bat would be expected. Habitat improvement would be a long-term beneficial impact. Based on the analysis above, impacts to Rafinesque's Eastern Big-eared Bat resulting from the Preferred Alternative would not be significant.

#### Bald Eagle (*Haliaeetus leucocephalus*)

Bald Eagles nest along the Alligator River west of the Range and use the Refuge for foraging. Currently, two Bald Eagle nests are located within the Refuge boundary; however, nesting does not occur in every nest every year. Although Bald Eagles do not nest on the Range, immature Bald Eagles and adults are occasionally seen within the Range boundaries (U.S. Air Force, 2008).

According to the National Bald Eagle Management Guidelines (USFWS, 2007), timber operations and forestry practices should not be conducted within 330 feet of a nest, and should avoid nests by at least 660 feet during the breeding season. Tree harvesting would occur after the maternal roosting season and migratory bird nesting season.

The North Carolina State University Gap Analysis Project lists the habitat types used by Bald Eagles (NCSU, 2005). Table 4-3 lists the vegetation alliances and corresponding acreages that are potentially used by Bald Eagles on the Range. The table also shows the total existing suitable habitat available, the percent reduction in suitable habitat that would result from implementing the Preferred Alternative, and the percentage of suitable habitat that would remain.

**Table 4-3. Suitable Habitat for Bald Eagle on the Range**

<b>Vegetation Alliance Name</b>	<b>Acres</b>
<b>Atlantic White Cedar Saturated Forest</b> <i>Chamaecyparis thyoides</i>	3,061
<b>Bald Cypress—Swamp Blackgum—(Water Tupelo) Saturated Forest</b> <i>Taxodium distichum—Nyssa sylvatica var. biflora—(Nyssa aquatic)</i>	920
<b>Loblolly Pine—Atlantic White Cedar—Red Maple—Swamp Blackgum Saturated Forest</b> <i>Pinus taeda—Chamaecyparis thyoides—Acer rubrum—Nyssa sylvatica var. biflora</i>	3,441
<b>Loblolly Pine—Sweetgum—Red Maple Saturated Forest</b> <i>Pinus taeda—Liquidambar styraciflua—Acer rubrum</i>	840
<b>Loblolly Pine Saturated Forest</b> <i>Pinus taeda</i>	1,691
<b>Pond Pine Saturated Woodland</b> <i>Pinus serotina</i>	15,664
<b>Swamp Blackgum—Red Maple—(Tuliptree) Saturated Forest</b> <i>Nyssa sylvatica var. biflora—Acer rubrum—(Liriodendron tulipifera)</i>	6,497
<b>Sweetbay—Swampbay Saturated Forest</b> <i>Magnolia virginiana—Persea palstris</i>	54
<b>Saltmeadow Cordgrass—(Saltgrass) Tidal Herbaceous</b> <i>(Spartina patens—(Distichlis spicata)</i>	109
<b>Total Existing Suitable Habitat</b>	<b>32,277</b>
<b>Total Minus 83 Acres from Preferred Alternative</b>	<b>32,194</b>
<b>Percent Temporary Decrease in Suitable Habitat from Preferred Alternative</b>	<b>0.26%</b>
<b>Percent Suitable Habitat Remaining</b>	<b>99.74%</b>

Short-term impacts that could result from the Preferred Alternative would include a minor decrease in habitat for Bald Eagles. Bald Eagles do not nest within the Range; therefore, nest disturbance resulting from the Preferred Alternative would not occur. Due to the abundance of suitable habitat on the Range and the surrounding Alligator River National Wildlife Refuge, it is unlikely that the Preferred Alternative would have any measurable effect on Bald Eagles in the area. Impacts to Bald Eagles resulting from the Preferred Alternative would not be significant.

Black-throated green warbler (*Dendroica virens waynei*)

The Black-throated Green Warbler is classified as significantly rare in North Carolina and is a Federal Species of Concern.

The North Carolina State University Gap Analysis Project lists the habitat types used by the Black-throated Green Warbler (NCSU, 2005). Table 4-4 lists the vegetation alliances and corresponding acreages that are potentially used by Black-throated Green Warblers on the Range. The table also shows the total existing suitable habitat available, the percent reduction in suitable habitat that would result from implementing the Preferred Alternative, and the percentage of suitable habitat that would remain.

**Table 4-4. Suitable Habitat for Black-throated Green Warbler on the Range**

<b>Vegetation Alliance Name</b>	<b>Acres</b>
<b>Atlantic White Cedar Saturated Forest</b> <i>Chamaecyparis thyoides</i>	3,061
<b>Bald Cypress—Swamp Blackgum—(Water Tupelo) Saturated Forest</b> <i>Taxodium distichum—Nyssa sylvatica var. biflora—(Nyssa aquatic)</i>	920
<b>Laurel Oak—Swamp Blackgum Saturated Forest</b> <i>Quercus laurifolia—Nyssa sylvatica var. biflora</i>	124
<b>Loblolly Pine—Atlantic White Cedar—Red Maple—Swamp Blackgum Saturated Forest</b> <i>Pinus taeda—Chamaecyparis thyoides—Acer rubrum—Nyssa sylvatica var. biflora</i>	3,441
<b>Loblolly Pine—Sweetgum—Red Maple Saturated Forest</b> <i>Pinus taeda—Liquidambar styraciflua—Acer rubrum</i>	840
<b>Loblolly Pine Saturated Forest</b> <i>Pinus taeda</i>	1,691
<b>Swamp Blackgum—Red Maple—(Tuliptree) Saturated Forest</b> <i>Nyssa sylvatica var. biflora—Acer rubrum—(Liriodendron tulipifera)</i>	6,497
<b>Total Existing Suitable Habitat</b>	<b>16,574</b>
<b>Total Minus 83 Acres from Preferred Alternative</b>	<b>16,491</b>
<b>Percent Temporary Decrease in Suitable Habitat from Preferred Alternative</b>	<b>0.50%</b>
<b>Percent Suitable Habitat Remaining</b>	<b>99.50%</b>

Short-term impacts that could result from implementing the Preferred Alternative would include a minor decrease in suitable habitat for Black-throated Green Warblers. Tree harvesting would be monitored by the Range Forester and would occur after the maternal roosting season and migratory bird nesting season. Any warblers that may occupy the proposed project area would likely disperse into adjacent habitats on the Range or surrounding Alligator River National Wildlife Refuge. It is expected that this species would return to the area once the Atlantic white cedar regenerated to a point where it would again provide suitable habitat. No long-term adverse impacts to Black-throated Green Warblers would be expected. Habitat improvement would be a long-term beneficial impact. Impacts to Black-throated Green Warblers resulting from the Preferred Alternative would not be significant.

### Timber (Canebrake) rattlesnake (*Crotalus horridus*)

The timber (canebrake) rattlesnake is a species of special concern in North Carolina.

The North Carolina State University Gap Analysis Project lists the habitat types used by the timber rattlesnake (NCSU, 2005). Table 4-5 lists the vegetation alliances and corresponding acreages that are potentially used by timber rattlesnakes on the Range. The table also shows the total existing suitable habitat available, the percent reduction in suitable habitat that would result from implementing the Preferred Alternative, and the percentage of suitable habitat that would remain.

**Table 4-5. Suitable Habitat for Timber (Canebrake) Rattlesnake on the Range**

<b>Vegetation Alliance Name</b>	<b>Acres</b>
<b>Atlantic White Cedar Saturated Forest</b> <i>Chamaecyparis thyoides</i>	3,061
<b>Bald Cypress—Swamp Blackgum—(Water Tupelo) Saturated Forest</b> <i>Taxodium distichum—Nyssa sylvatica var. biflora—(Nyssa aquatic)</i>	920
<b>Laurel Oak—Swamp Blackgum Saturated Forest</b> <i>Quercus laurifolia—Nyssa sylvatica var. biflora</i>	124
<b>Loblolly Pine—Atlantic White Cedar—Red Maple—Swamp Blackgum Saturated Forest</b> <i>Pinus taeda—Chamaecyparis thyoides—Acer rubrum—Nyssa sylvatica var. biflora</i>	3,441
<b>Loblolly Pine—Sweetgum—Red Maple Saturated Forest</b> <i>Pinus taeda—Liquidambar styraciflua—Acer rubrum</i>	840
<b>Loblolly Pine Saturated Forest</b> <i>Pinus taeda</i>	1,691
<b>Sweetbay—Swampbay Saturated Forest</b> <i>Magnolia virginiana—Persea palstris</i>	54
<b>Total Existing Suitable Habitat</b>	<b>10,131</b>
<b>Total Minus 83 Acres from Preferred Alternative</b>	<b>10,048</b>
<b>Percent Temporary Decrease in Suitable Habitat from Preferred Alternative</b>	<b>0.82%</b>
<b>Percent Suitable Habitat Remaining</b>	<b>99.18%</b>

Short-term impacts that could result from implementing the Preferred Alternative would include a minor decrease in habitat for timber rattlesnakes. As mentioned above, this species may use manmade clearings for various purposes during their lifecycle. It is possible that one or more timber rattlesnakes could be inadvertently killed during harvesting activities. No long-term adverse impacts to timber rattlesnakes would be expected. Habitat improvement would be a long-term beneficial impact. Impacts to timber rattlesnakes resulting from the Preferred Alternative would not be significant.

Based on the discussion above, impacts to federal and state listed and special status species resulting from the Preferred Alternative would not be significant.

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## 5. CUMULATIVE IMPACTS

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### 5.1. APPROACH

CEQ regulations stipulate that the cumulative impacts analysis within an EA should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR § 1508.7). CEQ guidance (*Considering Cumulative Effects Under the National Environmental Policy Act*) in considering cumulative impacts involves defining the scope of the other actions and their interrelationship with a proposed action. The scope must consider overlaps in the location and timing of a proposed action and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative impacts are most likely to arise when a relationship or synergy exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with, or in proximity to, a proposed action would be expected to have more potential for cumulative impacts than those more geographically separated.

As discussed in the CEQ’s *Considering Cumulative Effects Under the National Environmental Policy Act*, to identify cumulative impacts the following fundamental questions need to be addressed:

- Does a relationship exist such that affected resource areas of a proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable future actions?
- If one or more of the affected resource areas of a proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when a proposed action is considered alone?

The scope of the cumulative impacts analysis involves both the geographic extent of the impacts and the timeframe in which the impacts could be expected to occur. It is possible that analysis of cumulative impacts might go beyond the scope of the project-specific direct and indirect impacts to include expanded geographic and time boundaries and a focus on broad resource sustainability. This approach is becoming increasingly important as growing evidence suggests that the most significant impacts result from the combination of individual, often minor, impacts of multiple actions over time. The underlying issue is whether or not a resource can adequately recover from the impact of an action before the environment is exposed to other action(s).

### 5.2. PAST, PRESENT AND REASONABLY FORESEEABLE ACTIONS

Various types of past and present actions have the potential to affect the resources identified in Chapter 3. An overview of past, present and future actions is provided in the following sections with a description of the activities that are relevant to the impact analysis in Chapter 4. Geographic distribution, intensity, duration and the historical effects of activities are considered when determining whether a particular activity may contribute cumulatively and significantly to the impacts on resource areas identified in Chapter 4.

For this EA, a search was conducted to identify any past, present and future actions having the potential for additive and/or interactive effects including any actions undertaken by the Air Force, the Navy, the Alligator River National Wildlife Refuge, USACE Wilmington District, Department of Energy, U.S. Department of Agriculture (USDA), N.C. Natural Heritage Program, N.C. Ecosystem Enhancement Program, N.C. Wildlife Resources Commission, N.C. Division of Forest Resources (NCDFR), NCDENR and the North Carolina Department of Transportation. Additionally, no private development/activities were identified. Those past, present and future actions that have a potential for additive or interactive effects are summarized below. The cumulative impacts of the past, present and future actions, in combination with the impacts assessed for the proposed alternatives (Chapter 4) were then assessed.

- South Holly Road Atlantic White Cedar Restoration, Dare County Bombing Range (September 2007): In 2007, the Air Force completed an EA to remove hardwoods and loblolly pines on approximately 62 acres, treat the area with an aquatic herbicide to remove competition, and replant the area with Atlantic white cedar seedlings.
- Air Operations at the Dare County Bombing Range (January 2008): In 2008, the Navy completed an EA that analyzed the annual training activities at the Navy Range. On average between 6,000 and 7,000 training activities occur on the Navy Range per year between all of the military services. Training activities on the Navy Range include both fixed-wing and rotary-wing operations. The Air Force also conducts training activities using fixed-wing and rotary-wing aircraft on the Air Force Range. Based on current and foreseeable training requirements, future range utilization is expected to be similar to current activities.
- Alligator River National Wildlife Refuge Fire Management Plan (March 2009): An EA was completed in 2008 to undergo prescribed burns at the Alligator River National Wildlife Refuge and determined that prescribed burns would have no significant impact to the human or natural environment. The Alligator River National Wildlife Refuge consists of eight fire management units that encompass 148,694 burnable acres. These fire management units undergo prescribed burns during a cycle of 3-5 years to reduce wildfire fuels, to maintain firebreaks and to support wildlife habitat. Prescribed burns have occurred in the past and are expected to continue to occur on a 3-5 year cycle at the Alligator River National Wildlife Refuge.
- Bonner Bridge Replacement (December 2010): The Bonner Bridge Replacement Project will replace the existing bridge over Oregon Inlet and provide for the long-term retention of N.C. 12 between Oregon Inlet and Rodanthe. In December of 2010, a Record of Decision was signed by the Federal Highway Administration and the North Carolina Department of Transportation to replace the Bonner Bridge with a parallel bridge. Phase I of the Bonner Bridge replacement is anticipated to be completed in 2016; however, North Carolina Department of Transportation is unsure when construction will begin. Additional phases of the project could occur up through 2060.
- Improvements to the Target Pads and Support Areas of the Navy Dare County Bombing Range (April 2011): An EA was completed in April 2011 to enlarge and harden existing range storage areas and target pads to ensure better long-term sustainability for parts of the Navy Range. The Navy received a Section 404 permit from the USACE for the permanent fill of 7.434 acres of wetlands and a 401 Water Quality Certification from NCDENR; however, the Navy will only permanently fill 5.252 acres due to a reduction in the original design. The Navy started construction in 2013 and will complete construction in 2014.

- US 64 Improvements Project for Tyrell and Dare Counties: In January 2012, a Draft EIS was completed to widen a 27.3-mile section of US 64 in Tyrell and Dare counties. The Proposed Action is to widen the current two-lane road to a four-lane highway and replace the Lindsay C. Warren Bridge across the Alligator River. The EIS analyzes 15 study corridors, three bridge replacement alternatives and a No-Build Alternative. Portions of this project are funded for construction in 2014; however, the entire project is not currently funded.

### **5.3. DISCUSSION OF CUMULATIVE IMPACTS RELATIVE TO THE PROPOSED ACTION**

#### **5.3.1. Air Quality**

Present and foreseeable future activities would continue to generate emissions of criteria pollutants and greenhouse gases, contributing to regional air pollution. The emissions associated with the Proposed Action are extremely small in comparison to the total emissions produced in Dare County. Emissions are primarily from the operation of timber harvesting equipment and the movement of vehicles to and from the Range to transport logs to the lumber mill. The movements of these vehicles on public roads would combine with other vehicular traffic but, due to the small level of emissions produced from the Proposed Action, there would not be a significant cumulative impact to air quality. The prescribed burns that occur every three to five years in the Refuge are a continuing action and impacts to air quality from these burns are not significant. The activities associated with the Proposed Action and the improvements to the Navy's target pads and support areas would occur intermittently over a short period of time. The construction associated with the North Carolina Department of Transportation bridge projects would occur over a longer duration but the impacts to air quality would not be significant. Emissions associated with training activities on the Range are within the historical levels and do not significantly impact air quality. These projects, when considered together, would not be anticipated to affect the attainment status of Dare County under the Clean Air Act or prevent the county from remaining in attainment. Thus, no significant cumulative impacts to air quality are anticipated.

#### **5.3.2. Soils**

The Proposed Action would disturb 83 acres, or 0.18 percent, of soils on the Range. The South Holly Road project was projected to disturb 62 acres, or 0.13 percent, of soils on the Range. Improvements to the Navy's target pads and support areas are projected to alter 8.5 acres, or 0.018 percent, of soils on the Range. When combined, these activities would disturb about 0.33 percent of the soils on the Range. Soil disturbance on the Range from past activities, to include construction of roads, canals, administrative facilities and impact areas, totals approximately 5,400 acres, or roughly 11.77 percent of all soils on the Range. These activities, when considered together, would not be expected to have significant adverse effects on Range soils. Thus, no significant cumulative impacts to soils are anticipated.

#### **5.3.3. Water Resources**

Present and foreseeable future activities in the waters surrounding the Range and the Refuge would contribute to additional loss of wetlands. Neither the Proposed Action nor the South Holly Road project would result in a loss of wetlands. The improvements to the Navy's target pads and support areas will impact a total of 5.252 acres of wetlands, which represents 0.02 percent

of the total acreage of the Range. The Bonner Bridge replacement is anticipated to impact 0.09 acres of coastal wetlands during the first phase of the project, which is anticipated to be completed in 2016. The remaining phases of the project could impact as much as 50 acres of wetlands up to the year 2060 and must be approved by the USACE. The USACE would work with the North Carolina Department of Transportation to minimize/mitigate any impacts to wetlands prior to the remaining phase of construction. The remaining phases of the project would require either a future EA or EIS that would analyze the cumulative impacts to wetlands. The US 64 improvements are proposing to impact wetlands around the Refuge. Since that EIS is still a draft document and a Record of Decision has not been signed, the impacts of the project on wetlands are still under analysis; however, the current analysis suggests a potential impact of 10.26 acres of wetlands in Dare County. The North Carolina Department of Transportation will work with the USACE to obtain a permit for the fill of wetlands associated with this project. These projects, when considered together, would not be anticipated to affect the functionality of the watershed because any impacts to wetlands within that watershed would require mitigation. Projects that involve dredging or filling of wetlands are mitigated at a ratio greater than 1:1, as required by the U.S. Army Corps of Engineers (USACE). Generally, mitigation occurs within the same watershed as the impacts so the overall functionality of the watershed is not impacted. Thus, no cumulative impacts on water quality are anticipated.

#### **5.3.4. Biological Resources**

All present and future activities have the potential to generate localized impacts on wildlife. The Proposed Action and the South Holly Road project would have minimal and temporary impacts to native wildlife and vegetation, but would have long-term beneficial impacts. The Proposed Action in combination with the South Holly Road project and the improvements to the Navy's target pads and support areas would only impact 0.33 percent of the habitat on the Range. The prescribed burns within the Refuge can occur during any year and would impact wildlife and their habitat; however, the intent of the prescribed burns is to improve overall habitat quality and to prevent wildfires. The overall impact to native wildlife and vegetation would not be significant. The North Carolina Department of Transportation bridge projects would occur over several years (possibly starting in the 2014 timeframe) but they were both determined not to have a significant impact on native wildlife or vegetation. The projects were designed to minimize impacts. When combined, the impacts of all of these activities together would still only result in localized impacts, thus there would be no significant cumulative impacts on wildlife or vegetation.

The agencies responsible for conducting all present and future activities would be required to coordinate with USFWS on impacts to threatened and endangered species. Neither the Proposed Action nor the improvements to the Navy's target pads and support areas would have any effect on the red-cockaded woodpecker. The Refuge has completed all necessary consultations associated with prescribed burns for impacts to federally-listed species. The North Carolina Department of Transportation would consult with USFWS on the impacts to federally-listed species for the US 64 project. The project was designed to minimize impacts to red-cockaded woodpecker habitat and studies are underway to identify designs that would provide the safe crossing of US 64 for the red wolf. The Bonner Bridge replacement project would not impact these particular species because the impacts would be to more coastal and marine species. When combined, the impacts of all of these activities together would only result in localized impacts, minimization of impacts has been included in project designs and consultation with USFWS would occur. Thus, it is anticipated that there would be no significant cumulative impacts to federally-listed threatened and endangered species.

## **6. LIST OF PREPARERS AND PERSONS CONSULTED**

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### **Preparers**

**Cathryn Pesenti** (USAF, 4th Fighter Wing), Environmental Planner  
*B.S., Natural Resources Planning, Humboldt State University*  
NEPA Experience: 13 years

**Scott B. Smith** (USAF, Dare County Range), Installation Forester  
*B.S., Natural Resources Management, Colorado State University*  
Forest Management Experience: 33 years  
North Carolina Registered Forester # 853

**Robert L. Montgomery** (USAF, Dare County Range), Natural Resources Manager  
*B.S, Biology, Hampden-Sydney College*  
Natural Resources Management Experience: 22 Years

### **Persons Consulted**

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919-807-6556

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Environmental Review Coordinator  
NC State Historic Preservation Office  
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[renee.gledhill-earley@ncdcr.gov](mailto:renee.gledhill-earley@ncdcr.gov)  
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Tribal Historic Preservation Office Assistant  
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[yolasaun@nc-choerokee.com](mailto:yolasaun@nc-choerokee.com)  
828-554-6854

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## **6. CIRCULATION OF THE ASSESSMENT**

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The Draft EA was made available for public review and comment from 22 May 2014 through 20 June 2014. No comments were received from the public.

A copy of this document was provided to the recipients listed below. All comments received from these recipients are provided in Appendix E.

U.S. Fish and Wildlife Service  
Raleigh Ecological Services Field Office  
P.O. Box 33726  
Raleigh, NC 27636-3726

Alligator River National Wildlife Refuge  
Mr. David Rabon, Red Wolf Program Manager  
100 Conservation Way  
Manteo, NC 27954

North Carolina State Environmental Review Clearinghouse  
1301 Mail Service Center  
Raleigh, North Carolina 27699-1301

U.S. Army Corps of Engineers  
Washington Regulatory Field Office  
2407 West Fifth Street  
Washington, NC 27889

North Carolina Natural Heritage Program  
North Carolina Department of Environment and Natural Resources  
1601 Mail Service Center  
Raleigh, NC 27699-1601

North Carolina Coastal Federation  
P.O. Box 475  
Manteo, NC 27954

The Nature Conservancy  
North Carolina Chapter  
4705 University Drive, Suite 290  
Durham, NC 27707

Mr. Bill Pickens, Conifer Silviculturist  
North Carolina Forest Service  
2411 Old US 70 W  
Clayton, NC 27520

Dr. Eric Hinesley  
Professor Emeritus, North Carolina State University  
8505 Crowder Road  
Raleigh, NC 27603-9407



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## 7. REFERENCES

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## **APPENDIX A**

### **CULTURAL RESOURCES AND NATIVE AMERICAN CONSULTATION**

**AUGUST 6, 1996 LETTER OF CONCURRENCE WITH THE  
U.S. AIR FORCE CULTURAL RESOURCES  
SERVICEWIDE OVERVIEW PROJECT ASSESSMENT,  
SEYMOUR JOHNSON AIR FORCE BASE, NORTH CAROLINA**

**AND**

**APRIL 10, 2014 CORRESPONDENCE FROM  
THE EASTERN BAND OF CHEROKEE INDIANS  
CONFIRMING NO INTERESTS IN DARE COUNTY, NC**

ATTACHMENT E



**North Carolina Department of Cultural Resources**

James B. Hunt Jr., Governor  
Betty Ray McCain, Secretary

Division of Archives and History  
Jeffrey J. Crow, Director

August 6, 1998

Dr. Mike Russo  
Air Force Project Coordinator  
National Park Service  
Southeast Regional Office  
75 Spring Street  
Atlanta, Georgia 30303

Re: Draft Report, US Air Force Cultural Resources  
Servicewide Overview Project, Seymour Johnson AFB,  
Goldsboro, Wayne County, North Carolina, ER 97-7088

Dear Dr. Russo:

Thank you for your letter of July 8, 1998, concerning the above project.

We have reviewed the draft report concerning Seymour Johnson Air Force Base. For the most part, Seymour Johnson has done an excellent job under Sections 106 and 110 of the National Historic Preservation Act and is to be congratulated for their efforts.

In terms of archaeological resources, the following is the current status of investigations at the various facilities included in the report.

1. **Seymour Johnson Main Base.** Archaeological site 31WY9, the only recorded site on the base proper, was revisited by a member of our staff in 1978. The site had been destroyed by erosion and is not eligible for the National Register of Historic Places. We do not recommend any archaeological investigations on the main base due to the high level of ground disturbing activities that have taken place in the past.
2. **Dare County Ordnance Range.** A member of our staff conducted an aerial reconnaissance of this facility in 1978 to assess the potential for archaeological resources. Given the swampy nature of the terrain and the continued use of the facility as an ordnance range, it is our opinion that no National Register eligible archaeological resources are likely to be present. The recent survey of 21,330 acres of the facility supports this opinion since no archaeological resources were located. We were not consulted prior to the survey nor were we given a copy of the letter by David Anderson of the National Park Service concerning his opinion that the survey by Panamerican Consultants was inadequate. We request that a copy of his letter be forwarded to us as soon as possible so that we may respond to Dr. Anderson's concerns. We do not believe that any





Dr. Mike Russo  
August 6, 1996, Page 2

additional archaeological survey is necessary at the Dare County Ordinance Range.

3. **Fort Fisher Recreation Area.** We have received the archaeological survey report by Panamerican Consultants concerning the 101-acre tract controlled by the U.S. Air Force at the Fort Fisher Recreation Area. Three archaeological sites were either revisited or located during the investigation. As stated in our letter of July 10, 1996, to Paul Wetz of the Savannah Corps, we concur that site 31NH697\*\* is eligible for listing in the National Register of Historic Places. No recommendations or evaluations were included in the report for sites 31NH642\*\* or 31NH660, and in the same letter we requested clarification of their eligibility status, which we have yet to receive.
4. **Minor Tracts.** The minor tracts include the Jasper and Oatland Communication Sites and the Summerall, Saulston and Neuse Middle Markers Annexes. We need locations for these facilities as well as pertinent information concerning the extant buildings and land use before we can evaluate their potential for containing significant archaeological resources.

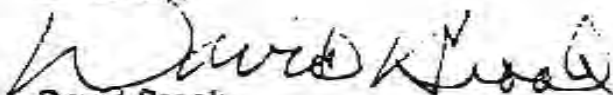
We trust that the above information clarifies the status of Section 106 and Section 110 compliance for archaeological resources at Seymour Johnson Air Force Base.

By our July 22, 1996, letter we responded to the draft historic structures survey report by Panamerican Consultants for Seymour Johnson Air Force Base. A copy of our letter is enclosed. We have raised the issue of whether the eight World War II buildings constitute a historic district, and are awaiting a response.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gladhill-Earley, environmental review coordinator, at 919/733-4763.

Sincerely,



David Brook  
Deputy State Historic Preservation Officer

DB:slw

Enclosure

cc: David Anderson  
National Park Service  
Southeastern Archaeological Center  
P.O. Box 2416  
Tallahassee, Florida 32312

bc: File  
Brown/Bowin Tuttle  
Clegg/Hall  
County  
RF

**From:** [CHASTAIN, WILLIAM D GS-12 USAF ACC 4 CES/CEIE](#)  
**To:** [PESENTI, CATHRYN M GS-11 USAF ACC 4 CES/CEIEA](#)  
**Subject:** FW: EBCI North Carolina counties of interest  
**Date:** Thursday, April 17, 2014 10:25:57 AM  
**Attachments:** [THPO Counties.docx](#)

---

FYI

W. Dean Chastain, P.E.  
Environmental Element Chief  
4 CES/CEIE  
DSN 722- 5168/COMM (919) 722-5168

-----Original Message-----

From: Yolanda Saunooke [<mailto:yolasaun@nc-chokeee.com>]  
Sent: Thursday, April 10, 2014 8:14 AM  
To: CHASTAIN, WILLIAM D GS-12 USAF ACC 4 CES/CEIE  
Subject: RE: EBCI North Carolina counties of interest

Here you go. Have a good day.

-----Original Message-----

From: CHASTAIN, WILLIAM D GS-12 USAF ACC 4 CES/CEIE [<mailto:william.chastain@us.af.mil>]  
Sent: Wednesday, April 09, 2014 11:39 AM  
To: Yolanda Saunooke  
Subject: EBCI North Carolina counties of interest

Ms. Saunooke,

Thank you for returning my call, and confirming that EBCI does not have interests in Dare County, NC. If you could provide a list of other North Carolina counties or areas that the EBCI does or does not have interests in, it would be greatly appreciated.

Again, thank you  
W. Dean Chastain, P.E.  
Environmental Element Leader  
4 CES/CEIE  
DSN 722- 5168/COMM (919) 722-5168



**State and County Summary  
Of the Cherokee Indians Traditional Aboriginal Territory**

*Based on the Map of the Former Territorial Limits of the Cherokee Nation of Indians Exhibiting the Boundaries of the Various Cessions of Land Made by Them to the Colonies and the United States by Treaty Stipulations, From the Beginning of Their Relations with the White to the Date of Their Removal West of the Mississippi River (Royce 1884)*

<b>ALABAMA</b>	<b>GEORGIA</b>	<b>NORTH CAROLINA</b>	<b>SOUTH CAROLINA</b>	<b>VIRGINIA</b>	<b>WEST VIRGINIA</b>
Blount	Banks	Alleghany	Abbeville	Bland	Boone
Cherokee	Barrow	Ashe	Aiken	Buchanan	Cabell
Colbert	Bartow	Avery	Anderson	Carroll	Fayette
Cullman	Catoosa	Buncombe	Calhoun	Dickenson	Kanawha
De Kalb	Chattooga	Burke	Cherokee	Floyd	Lincoln
Etowah	Cherokee	Caldwell	Chester	Giles	Logan
Franklin	Clarke	Catawba	Edgefield	Grayson	Mason
Jackson	Cobb	Cherokee	Fairfield	Lee	McDowell
Lauderdale	Dade	Clay	Greenwood	Montgomery	Mercer
Lawrence	Dawson	Cleveland	Greenville	Pulaski	Mingo
Limestone	Elbert	Gaston	Kershaw	Russell	Monroe
Madison	Fannin	Graham	Lancaster	Scott	Putnam
Marion	Floyd	Haywood	Laurens	Smyth	Raleigh
Marshall	Forsyth	Henderson	Lexington	Tazewell	Summers
Morgan	Franklin	Jackson	McCormick	Washington	Wayne
St. Clair	Gilmer	Lincoln	Newberry	Wise	Wyoming
Winston	Gordon	Macon	Oconee	Wythe	
	Gwinnett	Madison	Orangeburg		
	Habersham	McDowell	Pickens		
	Hall	Mitchell	Richland		
	Hart	Polk	Saluda		
	Jackson	Rutherford	Spartanburg		
	Lumpkin	Swain	Union		
	Madison	Transylvania	York		
	Murray	Watauga			
	Oconee	Wilkes			
	Oglethorpe	Yancey			
	Paulding				
	Pickens				
	Polk				
	Rabun				
	Stephens				
	Towns				
	Union				
	Walker				
	White				
	Whitfield				

**State and County Summary  
Of the Cherokee Indians Traditional Aboriginal Territory**

*Based on the Map of the Former Territorial Limits of the Cherokee Nation of Indians Exhibiting the Boundaries of the Various Cessions of Land Made by Them to the Colonies and the United States by Treaty Stipulations, From the Beginning of Their Relations with the White to the Date of Their Removal West of the Mississippi River (Royce 1884)*

Kentucky	Kentucky cont'd	Kentucky cont'd	Tennessee	Tennessee cont'd
Adair	Grayson	Mercer	Anderson	Lewis
Allen	Green	Metcalfe	Bedford	Loudon
Anderson	Greenup	Monroe	Bledsoe	Macon
Barren	Hancock	Montgomery	Blount	Marion
Bath	Hardin	Morgan	Bradley	Marshall
Bell	Harlan	Muhlenburg	Campbell	Maury
Boone	Harrison	Nelson	Cannon	McMinn
Bourbon	Hart	Nicholas	Carter	Meigs
Boyd	Henderson	Ohio	Cheatham	Monroe
Boyle	Henry	Oldham	Claiborne	Moore
Bracken	Hopkins	Owen	Clay	Morgan
Breathitt	Jackson	Owsley	Cocke	Montgomery
Breckinridge	Jefferson	Pendleton	Coffee	Overton
Bullitt	Jessamine	Perry	Cumberland	Perry
Butler	Johnson	Pike	Davidson	Pickett
Caldwell	Kenton	Powell	DeKalb	Polk
Campbell	Knott	Pulaski	Dickson	Putnam
Carroll	Knox	Robertson	Fentress	Rhea
Carter	Larue	Rockcastle	Franklin	Roane
Casey	Laurel	Rowan	Giles	Robertson
Christian	Lawrence	Russell	Grainger	Rutherford
Clark	Lee	Scott	Greene	Scott
Clay	Leslie	Shelby	Grundy	Sequatchie
Clinton	Letcher	Simpson	Hamblen	Sevier
Crittenden	Lewis	Spencer	Hamilton	Smith
Cumberland	Lincoln	Taylor	Hancock	Stewart
Daviess	Livingston	Todd	Hardin	Sullivan
Edmonson	Logan	Trigg	Hawkins	Sumner
Elliot	Lyon	Trimble	Hickman	Trousdale
Estill	McCreary	Union	Houston	Unicoi
Fayette	McLean	Warren	Humphreys	Union
Fleming	Madison	Washington	Jackson	Van Buren
Floyd	Magoffin	Wayne	Jefferson	Warren
Franklin	Marion	Webster	Johnson	Washington
Gallatin	Martin	Whitley	Knox	Wayne
Garrard	Mason	Wolfe	Lawrence	White
Grant	Meade	Woodford	Lincoln	Williamson
	Menifee			Wilson

## **APPENDIX B**

### **U.S. FISH AND WILDLIFE SERVICE ENDANGERED SPECIES CONSULTATION**



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Raleigh Field Office  
Post Office Box 33726  
Raleigh, North Carolina 27636-3726

January 17, 2014

Mr. Dennis G. Goodson, P.E.  
Deputy, Base Civil Engineer  
1095 Peterson Avenue  
Seymour Johnson AFB, NC 27531-2355

Dear Mr. Goodson:

The United States Fish and Wildlife Service (Service) has reviewed your December 9, 2013, letter and biological assessment (BA) titled "Biological Assessment for Gator Four Road Regeneration Harvest at Dare County Bomb Range [DCBR], North Carolina." The proposed action is a seed tree harvest of about 83 acres of mature Atlantic white cedar (*Chamaecyparis thyoides*) forest stands. The BA was provided to address potential impacts to federally protected species, including the red-cockaded woodpecker (*Picoides borealis*; RCW) and red wolf (*Canis rufus*). Our comments are provided in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543)(Act).

The two proposed regeneration harvest sites are located in the western part of DCBR. Both are at the end of Gator 4 Road. The northern stand is approximately 50 acres and the southern is about 33 acres. The proposed action would be a seed tree harvest in the two Atlantic white cedar stands. Tree removal will utilize Best Management Practices recommended for forested wetlands in northeastern North Carolina.

The BA points out that the proposed harvest location falls within forested wetlands including low pocosin, high pocosin, pond pine woodland, loblolly with mixed hardwood woodland, peatland Atlantic white cedar forest, bay forest, and non-riverine swamp forest. The Service observed in our December 23, 2010 regarding the proposed Forest Biomass Harvest that "...RCWs occupy habitat in a wide range of conditions on the Albemarle Pamlico Peninsula, practically none of which meets more than one or two of the criteria defining good quality foraging habitat expressed in the Recovery Plan for the Red-cockaded Woodpecker, Second Revision (Service 2003). The Service is aware that RCWs in Dare and neighboring counties regularly use practically all of the community types that occur around the project location listed above. Therefore, the absence of "good quality foraging habitat," on its own, is not a particularly helpful yardstick for demonstrating whether or not impacts of the proposed timber harvest would have insignificant effects on the RCW.

The BA contained in your December 9, 2013 letter indicates that aerial surveys have been conducted periodically near/over the project area since 1995 to assist in documenting the presence of RCW cavity trees. The document states that the latest aerial survey of the project area was done in February 2013. No active RCW cavity trees or clusters were detected within 0.5 miles of the proposed harvest sites. The closest active cluster is located approximately 4.3 miles east of the project. The closest recruitment cluster (inactive) is about 2.4 miles south-southeast of the proposed harvest.

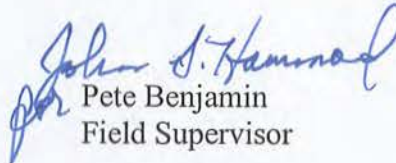


The BA states that the seed tree regeneration of 83 acres of Atlantic white cedar would not impact the long term RCW population goal for DCBR. The red wolf (*Canus rufus*) frequently uses DCBR woodlands. The BA states that no wolf dens are known to exist in/near the project boundary and that the Air Force will contact the Service's red wolf coordinator immediately prior to timber removal within each harvest unit to be certain the species has not moved into the unit identified for harvest.

Based on a review of the information provided and other information available, the Service believes that the proposed Atlantic white cedar regeneration harvest is not likely to adversely affect the RCW or red wolf, and will have no effect on any other federally listed endangered or threatened species, their formally designated critical habitat, or species currently proposed for listing under the Act at these sites. We believe that the requirements of section 7(a)(2) of the Act have been satisfied for your project. Please remember that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action.

The Service recognizes Dare County Bomb Range's commitment to responsible natural resource management and appreciates the installation's contributions to conserving fish, wildlife and their habitats for the continuing benefit of the American people. If you have any questions regarding this matter, please contact John Hammond at 919-856-4520 (ext. 28). Thank you for your continued cooperation with our agency.

Sincerely,

  
Pete Benjamin  
Field Supervisor

Literature Cited:

U.S. Fish and Wildlife Service. 2003. Recovery plan for the red-cockaded woodpecker (*Picoides borealis*): second revision. U.S. Fish and Wildlife Service, Atlanta, GA. 296 pp.

Cc: Mike Bryant, U.S. Fish and Wildlife Service  
Will McDearman, U.S. Fish and Wildlife Service  
David Rabon, U.S. Fish and Wildlife Service



DEPARTMENT OF THE AIR FORCE  
4TH FIGHTER WING (ACC)  
SEYMOUR JOHNSON AIR FORCE BASE NC

DEC - 9 2013

Mr. Dennis G. Goodson, P.E.  
Deputy, Base Civil Engineer  
1095 Peterson Avenue  
Seymour Johnson AFB, NC 27531-2355

Mr. David Rabon  
Red Wolf Program Manager  
Alligator River National Wildlife Refuge  
100 Conservation Way  
Manteo, NC 27954

Dear Mr Rabon

We are proposing to regenerate a total of 83 acres of Atlantic white cedar forest stands on the Dare County Bomb Range during fiscal years 2014 and 2015. The location of the proposed regeneration sites are shown on the attached map. The stands were evaluated by a third party consultant and were determined to be in a state of declining growth. The preferred silviculture treatment method is seed tree harvesting. This action is part of the on-going silviculture management of forest resources at Dare County Bombing Range to ensure a sustainable Atlantic white cedar population.

We request your comments regarding red wolf interaction, impacts, or concerns as they relate to this proposed action.

If you have any questions on this matter please call Mr. Donald Abrams at 919-722-5168.

Sincerely,

  
DENNIS G. GOODSON, P.E.

Attachment:  
Map - Gator 4 Road AWC Regeneration Areas



DEPARTMENT OF THE AIR FORCE  
4TH FIGHTER WING (ACC)  
SEYMOUR JOHNSON AIR FORCE BASE NC

DEC - 9 2013

Mr. Dennis G. Goodson, P.E.  
Deputy, Base Civil Engineer  
1095 Peterson Avenue  
Seymour Johnson AFB NC 27531-2355

Mr. John S. Hammond  
Endangered Species Coordinator  
US Fish and Wildlife Service-ES  
P.O. Box 33726  
Raleigh, NC 27636-3726

Dear Mr. Hammond

We are hereby submitting for your review and concurrence a Biological Assessment (BA) on the Gator 4 Road Regeneration Harvest. The proposed action is a seed tree harvest of approximately 83 acres of mature Atlantic white cedar forest stands on the Dare County Bomb Range, NC. The BA found that this harvest would have no effect on the red-cockaded woodpecker or its habitat.

The US Air Force requests your concurrence with these activities. If you have any questions on this matter please contact Mr. Donald Abrams at 919-722-5168.

Sincerely

  
DENNIS G. GOODSON, P.E.

Attachment:  
Biological Assessment for the Gator 4 Road Regeneration Harvest

cc:  
David Rabon, Alligator River National Wildlife Refuge

**BIOLOGICAL ASSESSMENT  
FOR  
GATOR FOUR ROAD REGENERATION HARVEST  
AT DARE COUNTY BOMB RANGE  
NORTH CAROLINA**

**Prepared By  
Robert Montgomery  
Natural Resources Manager  
4 CES/CEIE  
Seymour Johnson AFB / Dare County Bomb Range**



## INTRODUCTION

The Fourth Civil Engineer Squadron at Seymour Johnson AFB, North Carolina intends to harvest approximately eighty three acres Atlantic white cedar tree species located at Dare County Bomb Range (DCBR), North Carolina. Tract one (1) is approximately 50 acres and Tract two (2) is approximately 33 acres. Tract 1 is proposed to be harvested in FY 2014; Tract 2 is proposed to be harvested in FY 2015.

The purpose of this action is to harvest mature forest stands and regenerate the area via seed tree method. Five seed trees per acre will be maintained in the harvest areas. The seed trees shall be approximately ten to twelve inches in diameter at breast height (dbh) with spacing of approximately 90 to 95 feet between seed trees.

DCBR and the surrounding Alligator River National Wildlife Refuge (ARNWR) provide habitat for a significant and unique population of the endangered red-cockaded woodpecker (*Picoides borealis*) (RCW). In addition to the natural expansion of the RCW population, biologists provision recruitment sites with artificial cavity boxes in an attempt to increase the RCW population to the projected carrying capacity. Through annual surveys and intense monitoring, distribution of the RCW population on DCBR has been documented.

## PROJECT AREA

The project area is located in the southern portion of the Dare County mainland in northeastern North Carolina. This area is bounded on the north by Albemarle Sound and ARNWR, to the east by Pamlico Sound, on the south by mainland Hyde County and Pamlico Sound, and on the west by Alligator River. ARNWR and DCBR occupy most of this geographic area, which is dominated by forested wetlands. Typical forest and shrub community types include low pocosin, high pocosin, pond pine woodland, loblolly with mixed hardwood woodland, peatland Atlantic white cedar forest, bay forest, and nonriverine swamp forest.

The RCW is the primary federally endangered species occurring on the Range. Currently, the center of RCW distribution appears to the north, south, and west of the U.S. Air Force (USAF) impact area on DCBR and on the adjacent ARNWR. A total of seventeen RCW clusters (natural and recruitment sites) are currently documented on the Range.

## **PROJECT DESCRIPTION**

The proposed regeneration harvest sites are located in the western portion of the 46,621-acre DCBR. The proposed timber harvest will be a seed tree harvest, consisting of Atlantic white cedar tree species located in the vicinity of Gator Four Road (Figure 1).

Harvesting will utilize Best Management Practices recommended for forested wetlands in this region of North Carolina. The logger shall take all necessary precautions to prevent soil erosion and severe soil disturbance. No dead trees or snags will be cut or pushed down unless absolutely necessary for access to merchantable timber.

## **METHODS**

Experienced on-site Range and contract biologists trained in RCW ecology, evaluation of RCW cavities and habitat, and RCW survey techniques, conducted aerial (helicopter) surveys in the project area from 1995 to present. The latest aerial survey of the project area was conducted in February 2013. Information gathered from past aerial and ground surveys, the work of the Range forestry staff, and previous biological investigations, provided information on the current distribution of the RCW on DCBR.

## **RESULTS AND DISCUSSION**

No active RCW cavity trees or clusters were detected within one-half mile of the proposed harvest sites (Figure 2). The closest active cluster is located approximately 4.3 miles from the proposed timber harvest sites. Based on the definition of good quality foraging habitat as outlined on pages 188 and 189 of the Red-cockaded Woodpecker Recovery Plan (second revision), these forest stands are not considered good quality foraging habitat for RCW due to the fact that the stands consist predominantly of Atlantic white cedar tree species. Therefore, a no-effect determination for this timber harvest is appropriate.

Based on the Endangered Species Management Plan for the RCW at DCBR (2007), and subsequent revisions - it has been projected that DCBR should be able to support approximately twenty three clusters occupied by breeding groups. Ample nesting and foraging habitat is available to the 23 (existing natural and recruitment, plus proposed future) clusters of RCWs on the Range. The closest proposed RCW recruitment stand is located approximately 2.4 miles from the

proposed timber harvest site. The regeneration of 83 acres of Atlantic white cedar tree species will not impact the long term RCW population goal for the Range.

The proposed project will also occur within the known range of the American Alligator (*Alligator mississippiensis*) and red wolf (*Canis rufus*). The alligator primarily inhabits aquatic habitat and should not be negatively impacted by the proposed action. Red wolves frequently utilize habitat on DCBR; however, no wolves are known to den within the proposed site. The Air Force will contact the Red Wolf Project Manager immediately prior to timber removal to be certain the species has not moved into the harvest area.

No federally protected plant species are known to occur on DCBR, so no plant surveys were conducted; no federally protected plant species are expected to be affected by the action.

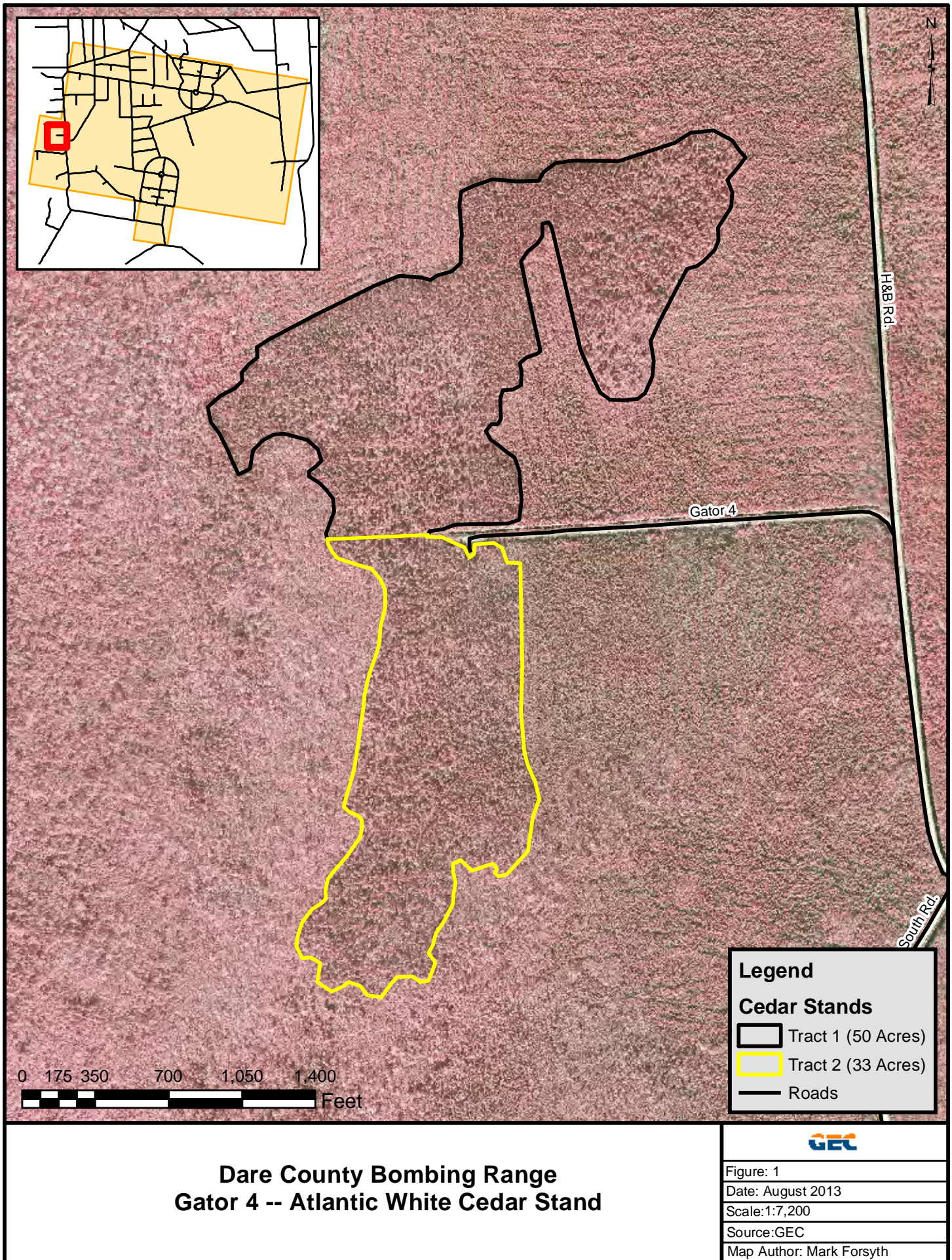
## **CONCLUSION**

It is concluded that the harvest operation proposed for the site evaluated in this assessment will have “no adverse effect” on the RCW, or any other species listed as threatened or endangered, or proposed for such listing by the U.S. Fish and Wildlife Service.

### **Attachments:**

1. Gator 4 Road Atlantic white cedar stand map (Figure 1)
2. Gator 4 Road Atlantic white cedar stand distance to RCW clusters (Figure 2)



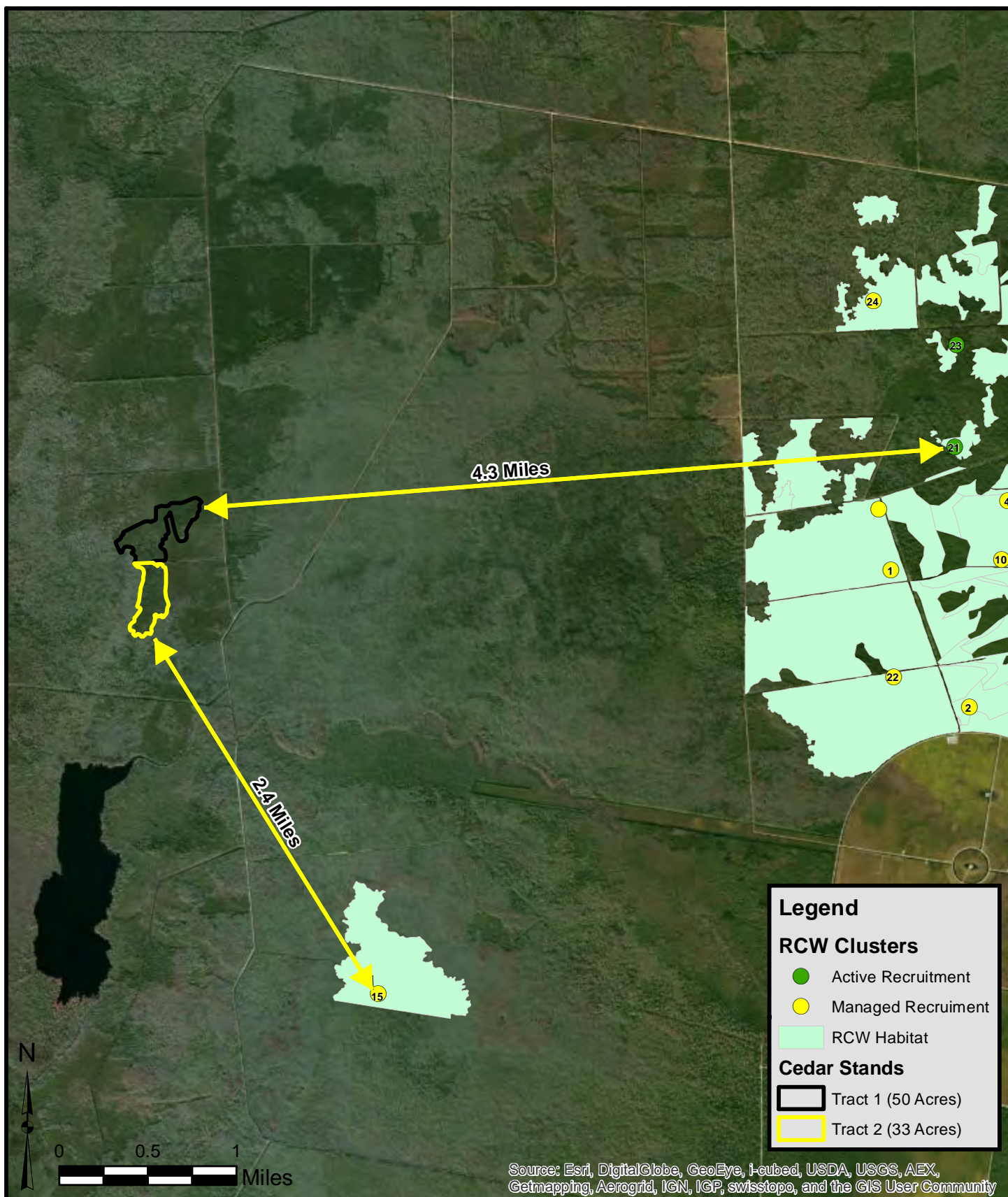


**Dare County Bombing Range  
Gator 4 -- Atlantic White Cedar Stand**



Figure: 1  
Date: August 2013  
Scale: 1:7,200  
Source: GEC  
Map Author: Mark Forsyth





# **Dare County Bombing Range Gator 4 -- Atlantic White Cedar Stand Distance to RCW Cluster**



Figure: 2

Date: August 2013

Scale: 1:48,000

Source: GEC

Map Author: Mark Forsyth

## **APPENDIX C**

### **GREENHOUSE GAS ESTIMATES**

### Estimated Greenhouse Gas Emissions Associated with Atlantic White Cedar Regeneration Project

Heavy Equipment	Est Hourly Fuel Consumption (gal)	Est Daily Fuel Consumption (8 hrs)	Est Project Length (days)	Est Total Project Fuel Consumption (gal)
Feller-Buncher	10.56688209	84.53505675	160	13,526
Skidder	11.88774236	95.10193885	160	15,216
Loader	10.56688209	84.53505675	160	13,526
				<b>42,268</b>

Round-Trip to Mill (miles) Gatesville	Trucks per Day	Est Fuel Consumption @ 6 mpg (gal)	Est Project Length (days)	Est Total Project Fuel Consumption (gal)
270	2	90	160	<b>14,400</b>

**Total Est Fuel Consumption for Project** **56,668**

liter = 0.264172052358148 gallon

80000 pound tractor-trailer rigs get 5-7 miles per gallon

<http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

The EPA Public Access Web is operated in diminished capacity. Some services such as search are temporarily unavailable.

## Greenhouse Gas Equivalencies Calculator

Did you ever wonder what reducing carbon dioxide (CO<sub>2</sub>) emissions by 1 million metric tons means in everyday terms? The greenhouse gas equivalencies calculator can help you understand just that, translating abstract measurements into concrete terms you can understand, such as "equivalent to avoiding the carbon dioxide emissions of 183,000 cars annually."

This calculator may be useful in communicating your greenhouse gas reduction strategy, reduction targets, or other initiatives aimed at reducing greenhouse gas emissions.

### Enter Your Data

There are two options for entering reduction data into this calculator.

If You Have Energy Data

If You Have Emissions Data

Please note that these estimates are approximate and should not be used for emission inventory or formal carbon footprinting exercises. Read more about the caveats and explanations on the [Calculations and References page](#)

56668

gallons of gasoline

Calculate

### Equivalency Results

The sum of the greenhouse gas emissions you entered above is

504 Metric Tons of Carbon Dioxide Equivalent. This is equivalent to:

#### Annual greenhouse gas emissions from

105



passenger vehicles

189



tons of waste sent to the landfill instead of recycled

#### CO<sub>2</sub> emissions from

56,477



gallons of gasoline consumed

6.6



tanker trucks' worth of gasoline

25.2



homes' energy use for one year

69.3



homes' electricity use for one year

2.2



railcars worth of coal burned

1,172



barrels of oil consumed

20,991



propane cylinders used for home barbeques

0.0001



coal-fired power plants in one year

#### Carbon sequestered by

12,917



tree seedlings grown for 10 years

413



acres of U.S. forests in one year

3.9



acres of U.S. forests preserved from conversion to cropland in one year



## **APPENDIX D**

### **AIR EMISSIONS CALCULATIONS**

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

## 1. General Information

---

### - Action Location

**Base:** SEYMOUR JOHNSON AFB  
**County(s):** Dare  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Action Title:** Atlantic White Cedar Restoration Project, Dare County Range, North Carolina

**- Project Number/s (if applicable):** N/A

**- Projected Action Start Date:** 9 / 2014

### - Action Purpose and Need:

The purpose of the proposed action is to regenerate stands of Atlantic white cedar in degraded condition to ensure they are not replaced by hardwood stands, provide quality habitat for protected wildlife species and to sustain the presence of Atlantic white cedar on the Range.

The need for the proposed action is to prevent the continued decline of these Atlantic white cedar stands, which would ultimately result in the transition to mixed cedar-hardwood stands and eventual replacement by hardwood stands.

### - Action Description:

The proposed project would include whole tree harvesting of approximately 83 acres of standing Atlantic white cedar trees located near the western boundary of the Range at the end of Gator 4 Road. Natural regeneration would rely on the seed bank in the forest floor; supplemented by existing seed trees that would be left unharvested (five per acre). The seed trees would be approximately 10 to 12 inches in diameter at breast height with spacing of approximately 90 to 95 feet between trees.

Under the No-Action Alternative, no harvesting and regeneration of Atlantic white cedar would occur at the Range. Efforts to improve or restore Atlantic white cedar would not be completed under this alternative. These Atlantic white cedar stands would continue to decline, transition to mixed cedar-hardwood stands, and eventually be replaced by hardwood stands.

### - Point of Contact

**Name:** Cathryn Pesenti  
**Title:** GS-11  
**Organization:** 4 CES/CEIEA  
**Email:** cathryn.pesenti@us.af.mil  
**Phone Number:** 919-722-7455

### - Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Timber Harvesting
3.	Construction / Demolition	Timber Harvesting

## 2. Construction / Demolition

---

### 2.1 General Information & Timeline Assumptions

#### - Activity Location

**County:** Dare  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- **Activity Title:** Timber Harvesting

- **Activity Description:**

Tract 1 would consist of approximately 50 acres and would be harvested during the first year

- **Activity Start Date**

**Start Month:** 9

**Start Month:** 2014

- **Activity End Date**

**Indefinite:** False

**End Month:** 11

**End Month:** 2014

- **Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.226871
SO <sub>x</sub>	0.002672
NO <sub>x</sub>	1.746616
CO	0.966928
PM 10	32.218148

Pollutant	Total Emissions (TONs)
PM 2.5	0.073535
Pb	0.000000
NH <sub>3</sub>	0.003609

## 2.1 Site Grading Phase

### 2.1.1 Site Grading Phase Timeline Assumptions

- **Phase Start Date**

**Start Month:** 9

**Start Quarter:** 1

**Start Year:** 2014

- **Phase Duration**

**Number of Month:** 3

**Number of Days:** 0

### 2.1.2 Site Grading Phase Assumptions

- **General Site Grading Information**

**Area of Site to be Graded (ft<sup>2</sup>):** 1089000

**Amount of Material to be Hauled On-Site (yd<sup>3</sup>):** 0

**Amount of Material to be Hauled Off-Site (yd<sup>3</sup>):** 9360

- **Site Grading Default Settings**

**Default Settings Used:** No

**Average Day(s) worked per week:** 5

- **Construction Exhaust**

Equipment Name	Number Of Equipment	Hours Per Day
Off-Highway Tractors Composite	1	8
Off-Highway Trucks Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

## - Vehicle Exhaust

Average Hauling Truck Capacity (yd<sup>3</sup>): 52  
 Average Hauling Truck Round Trip Commute (mile): 270

## - Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

## - Worker Trips

Average Worker Round Trip Commute (mile): 60

## - Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

## 2.1.3 Site Grading Phase Emission Factor(s)

### - Construction Exhaust Emission Factors (lb/hour)

Off-Highway Tractors Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2</sub>
Emission Factors	0.1985	0.0016	1.6110	0.7438	0.0767	0.0767	0.0179	151.42
Off-Highway Trucks Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2</sub>
Emission Factors	0.2033	0.0026	1.6679	0.6148	0.0578	0.0578	0.0183	260.06
Rubber Tired Dozers Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2</sub>
Emission Factors	0.2853	0.0024	2.3866	1.1058	0.0993	0.0993	0.0257	239.09
Tractors/Loaders/Backhoes Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2</sub>
Emission Factors	0.0728	0.0007	0.4977	0.3746	0.0340	0.0340	0.0065	66.800

### - Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	Pb	NH <sub>3</sub>	CO <sub>2</sub>
LDGV	00.5480	00.0068	00.3980	08.2600	00.0248	00.0113		00.1017	00368.1
LDGT	00.7740	00.0095	00.6230	09.8300	00.0249	00.0114		00.1017	00516.3
HDGV	00.8080	00.0165	01.2210	08.3100	00.0453	00.0294		00.0451	00905.6
LDDV	00.1190	00.0029	00.1630	00.7740	00.0485	00.0330		00.0068	00314.1
LDDT	00.3630	00.0056	00.4160	00.6310	00.0561	00.0400		00.0068	00598.6
HDDV	00.3250	00.0116	02.8170	00.8320	00.1101	00.0827		00.0270	01243.9
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

## 2.1.4 Site Grading Phase Formula(s)

### - Fugitive Dust Emissions per Phase

$$PM_{10FD} = (20 * ACRE * WD) / 2000$$

PM<sub>10FD</sub>: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

### - Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

CEE<sub>POL</sub>: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

## - Vehicle Exhaust Emissions per Phase

$$\text{VMT}_{\text{VE}} = (\text{HA}_{\text{OnSite}} + \text{HA}_{\text{OffSite}}) * (1 / \text{HC}) * \text{HT}$$

VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)

HA<sub>OnSite</sub>: Amount of Material to be Hauled On-Site (yd<sup>3</sup>)

HA<sub>OffSite</sub>: Amount of Material to be Hauled Off-Site (yd<sup>3</sup>)

HC: Average Hauling Truck Capacity (yd<sup>3</sup>)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd<sup>3</sup>)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$\text{V}_{\text{POL}} = (\text{VMT}_{\text{VE}} * 0.002205 * \text{EF}_{\text{POL}} * \text{VM}) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

## - Worker Trips Emissions per Phase

$$\text{VMT}_{\text{WT}} = \text{WD} * \text{WT} * 1.25 * \text{NE}$$

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$\text{V}_{\text{POL}} = (\text{VMT}_{\text{WT}} * 0.002205 * \text{EF}_{\text{POL}} * \text{VM}) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

## 3. Construction / Demolition

---

### 3.1 General Information & Timeline Assumptions

#### - Activity Location

County: Dare

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Timber Harvesting

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

## - Activity Description:

Tract 2 would be comprised of approximately 33 acres and would be harvested during the second year

## - Activity Start Date

Start Month: 5

Start Month: 2015

## - Activity End Date

Indefinite: False

End Month: 7

End Month: 2015

## - Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.211291
SO <sub>x</sub>	0.002534
NO <sub>x</sub>	1.574347
CO	0.919930
PM 10	21.281959

Pollutant	Total Emissions (TONs)
PM 2.5	0.066290
Pb	0.000000
NH <sub>3</sub>	0.003288

## 3.1 Site Grading Phase

### 3.1.1 Site Grading Phase Timeline Assumptions

#### - Phase Start Date

Start Month: 5

Start Quarter: 1

Start Year: 2015

#### - Phase Duration

Number of Month: 3

Number of Days: 0

### 3.1.2 Site Grading Phase Assumptions

#### - General Site Grading Information

Area of Site to be Graded (ft<sup>2</sup>): 718740

Amount of Material to be Hauled On-Site (yd<sup>3</sup>): 0

Amount of Material to be Hauled Off-Site (yd<sup>3</sup>): 7280

#### - Site Grading Default Settings

Default Settings Used: No

Average Day(s) worked per week: 5

#### - Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Off-Highway Tractors Composite	1	8
Off-Highway Trucks Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

#### - Vehicle Exhaust

Average Hauling Truck Capacity (yd<sup>3</sup>): 52

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Average Hauling Truck Round Trip Commute (mile): 270

## - Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

## - Worker Trips

Average Worker Round Trip Commute (mile): 60

## - Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

### 3.1.3 Site Grading Phase Emission Factor(s)

#### - Construction Exhaust Emission Factors (lb/hour)

Off-Highway Tractors Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2</sub>
Emission Factors	0.1893	0.0016	1.5084	0.7243	0.0717	0.0717	0.0170	151.42
Off-Highway Trucks Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2</sub>
Emission Factors	0.1923	0.0026	1.4932	0.5973	0.0516	0.0516	0.0173	260.05
Rubber Tired Dozers Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2</sub>
Emission Factors	0.2721	0.0024	2.2344	1.0419	0.0924	0.0924	0.0245	239.09
Tractors/Loaders/Backhoes Composite								
	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CH <sub>4</sub>	CO <sub>2</sub>
Emission Factors	0.0666	0.0007	0.4500	0.3715	0.0297	0.0297	0.0060	66.799

#### - Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	Pb	NH <sub>3</sub>	CO <sub>2</sub>
LDGV	00.5090	00.0068	00.3650	08.0400	00.0248	00.0113		00.1017	00368.0
LDGT	00.7320	00.0095	00.5800	09.5000	00.0249	00.0113		00.1017	00516.2
HDGV	00.7440	00.0165	01.0620	08.2200	00.0432	00.0275		00.0451	00904.8
LDDV	00.1110	00.0029	00.1370	00.7480	00.0447	00.0295		00.0068	00314.1
LDDT	00.3450	00.0056	00.3830	00.6140	00.0533	00.0375		00.0068	00598.6
HDDV	00.3090	00.0116	02.4520	00.7240	00.0970	00.0707		00.0270	01243.4
MC	02.3000	00.0033	01.1800	14.1800	00.0372	00.0207		00.0113	00177.4

### 3.1.4 Site Grading Phase Formula(s)

#### - Fugitive Dust Emissions per Phase

$$PM_{10FD} = (20 * ACRE * WD) / 2000$$

PM<sub>10FD</sub>: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

#### - Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE<sub>POL</sub>: Construction Exhaust Emissions (TONs)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

NE: Number of Equipment  
WD: Number of Total Work Days (days)  
H: Hours Worked per Day (hours)  
EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hour)  
2000: Conversion Factor pounds to tons

## - Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)  
HA<sub>OnSite</sub>: Amount of Material to be Hauled On-Site (yd<sup>3</sup>)  
HA<sub>OffSite</sub>: Amount of Material to be Hauled Off-Site (yd<sup>3</sup>)  
HC: Average Hauling Truck Capacity (yd<sup>3</sup>)  
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd<sup>3</sup>)  
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)  
VMT<sub>VE</sub>: Vehicle Exhaust Vehicle Miles Travel (miles)  
0.002205: Conversion Factor grams to pounds  
EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)  
VM: Vehicle Exhaust On Road Vehicle Mixture (%)  
2000: Conversion Factor pounds to tons

## - Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)  
WD: Number of Total Work Days (days)  
WT: Average Worker Round Trip Commute (mile)  
1.25: Conversion Factor Number of Construction Equipment to Number of Works  
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V<sub>POL</sub>: Vehicle Emissions (TONs)  
VMT<sub>WT</sub>: Worker Trips Vehicle Miles Travel (miles)  
0.002205: Conversion Factor grams to pounds  
EF<sub>POL</sub>: Emission Factor for Pollutant (grams/mile)  
VM: Worker Trips On Road Vehicle Mixture (%)  
2000: Conversion Factor pounds to tons



# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** SEYMOUR JOHNSON AFB  
**County(s):** Dare  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** Atlantic White Cedar Restoration Project, Dare County Range, North Carolina

**c. Project Number/s (if applicable):** N/A

**d. Projected Action Start Date:** 9 / 2014

**e. Action Description:**

The proposed project would include whole tree harvesting of approximately 83 acres of standing Atlantic white cedar trees located near the western boundary of the Range at the end of Gator 4 Road. Natural regeneration would rely on the seed bank in the forest floor; supplemented by existing seed trees that would be left unharvested (five per acre). The seed trees would be approximately 10 to 12 inches in diameter at breast height with spacing of approximately 90 to 95 feet between trees.

Under the No-Action Alternative, no harvesting and regeneration of Atlantic white cedar would occur at the Range. Efforts to improve or restore Atlantic white cedar would not be completed under this alternative. These Atlantic white cedar stands would continue to decline, transition to mixed cedar-hardwood stands, and eventually be replaced by hardwood stands.

**f. Point of Contact:**

**Name:** Cathryn Pesenti  
**Title:** GS-11  
**Organization:** 4 CES/CEIEA  
**Email:** cathryn.pesenti@us.af.mil  
**Phone Number:** 919-722-7455

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

\_\_\_\_\_ applicable  
\_\_X\_\_ not applicable

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions.

"Air Quality Indicators" were used to provide an indication of the significance of potential impacts to air quality. These air quality indicators are EPA General Conformity Rule (GCR) thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

# AIR CONFORMITY APPLICABILITY MODEL REPORT

## RECORD OF AIR ANALYSIS (ROAA)

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the GCR de minimis threshold for the least severe non-attainment classification for all criteria pollutants (see 40 CFR 93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

### Analysis Summary:

#### 2014

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.227	100	No
NOx	1.747	100	No
CO	0.967	100	No
SOx	0.003	100	No
PM 10	32.218	100	No
PM 2.5	0.074	100	No
Pb	0.000	100	No
NH3	0.004	100	No

#### 2015

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.211	100	No
NOx	1.574	100	No
CO	0.920	100	No
SOx	0.003	100	No
PM 10	21.282	100	No
PM 2.5	0.066	100	No
Pb	0.000	100	No
NH3	0.003	100	No

#### 2016 - (Steady State)

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000	100	No
SOx	0.000	100	No
PM 10	0.000	100	No
PM 2.5	0.000	100	No
Pb	0.000	100	No
NH3	0.000	100	No

None of estimated emissions associated with this action are above the GCR thresholds, indicating no significant impact to air quality; therefore, no further air assessment is needed.

**AIR CONFORMITY APPLICABILITY MODEL REPORT  
RECORD OF AIR ANALYSIS (ROAA)**

---

Cathryn Pesenti, GS-11

---

DATE

## **APPENDIX E**

### **PUBLIC AND AGENCY REVIEW AND COMMENT**

8505 Crowder Rd  
Raleigh, NC 27603-9407  
17 June 2014

Mr. Dennis G. Goodson, P. E.  
Deputy Base Civil Engineer  
1095 Peterson Avenue  
Seymour Johnson AFB NC 27531-2355

Dear Mr. Goodson:

Thanks for giving me the opportunity to look over the Draft EA and FONSI for a proposed Atlantic White Cedar Restoration Project at Dare County Range, North Carolina. In general, I think it is well written. I only have a few minor suggestions, listed below:

1. In several places, the document refers to "stands of degraded Atlantic white cedar", but little information is given to clarify what that means. On page 9, under the headings Purpose and Need, I think it would be useful to include more descriptive information about the present condition, stand age, stocking, etc. Also, in these two sections, I think it would make a stronger argument to stress the historical importance of AWC as well just how little "pure" AWC still remains, and that a high percentage of that is in the Dare County Range. Lack of active forest management will surely will lead to a conversion to hardwoods, and further loss of the AWC type. Pure AWC stands have experienced major losses in the last decade as a consequence of hurricanes and fires (Isabella, Sandy, Dismal Swamp fires).

Quite a bit of historical information can be gleaned from the website  
[www.atlanticwhitecedar.org](http://www.atlanticwhitecedar.org).

2. Page 9, 3<sup>rd</sup> and 4<sup>th</sup> lines from bottom. Reword as follows: "... concluded that growth rates of the same Atlantic white cedar stands were decreasing."
3. Page 27, 3<sup>rd</sup> line from the bottom. The phrase "lack down wood debris" is confusing, and should be reworded.
4. Page 41. Change to "Dr. Eric Hinesley".

If I can be of further assistance, please advise.

Sincerely,

A handwritten signature in cursive script that reads "Eric Hinesley".

Eric Hinesley  
919 779-3135 (home)  
919 539-2707 (cell)



DEPARTMENT OF THE AIR FORCE  
4TH FIGHTER WING (ACC)  
SEYMOUR JOHNSON AIR FORCE BASE NC

AUG 18 2014

Mr. Dennis G. Goodson, P.E.  
Deputy Base Civil Engineer  
1095 Peterson Avenue  
Seymour Johnson AFB NC 27531-2355

Dr. Eric Hinesley  
8505 Crowder Rd  
Raleigh, NC 27603-9407

Dear Dr. Hinesley

The 4th Civil Engineer Squadron at Seymour Johnson AFB received your letter dated June 17, 2014 regarding the Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the proposed Atlantic White Cedar (AWC) Restoration Project at Dare County Range, NC. We appreciate your suggestions and will modify the EA as follows:

Section 1. Purposed and Need. The stand age is approximately 110 years old. The 1999 Inventory determined the stocking for Tract one was approximately 424 AWC trees per acre and for Tract 2 the stocking was approximately 209 AWC trees per acre. The 2009 Inventory determined the stocking for Tract 1 was approximately 267 AWC trees per acre and for Tract 2 the stocking was approximately 162 trees per acre.

According to the NC Natural Heritage Program, the Peatland Atlantic white cedar in Dare County, shared by Dare County Bombing Range and the Alligator River National Wildlife Refuge, is the largest occurrence of pure AWC in North Carolina.

On Page 9, 3<sup>rd</sup> and 4<sup>th</sup> lines from the bottom will be reworded as follows: concluded that growth rates of the same Atlantic white cedar stands were decreasing.

On Page 27, 3<sup>rd</sup> line from the bottom will be reworded as follows: lack down woody material that can serve as cover from predators.

On Page 41 will be changed to Dr. Eric Hinesley.

Thank you for providing your suggestions.

Sincerely

  
DENNIS G. GOODSON, P.E.



1095 Peterson Avenue  
Seymour Johnson AFB NC 27531-2355

Dear Mr. Dennis G. Goodson, P.E.:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the proposed Atlantic White Cedar Restoration Project at Dare County Range, North Carolina. The proposed plan is to harvest 83 acres of Atlantic white cedar over two years, allow for natural regeneration from the seed bank, and apply wetland-approved herbicides on competing vegetation, if necessary.

The project is proposed to address a degrading stand of Atlantic white cedar and is aimed at preventing Atlantic white cedar replacement by hardwood (e.g., red maple) stands. The EA states that a 2009 forest inventory suggested Atlantic white cedar stand growth rates were declining due to competition and declining conditions. It would be helpful to know more about the particular declining conditions at the project site. Hydrology, competition, and viability of the seed bank may all contribute to project effectiveness. Addressing only one condition, such as competition, may not fully enable Atlantic white cedar regeneration if another limiting condition is at play.

The strategies for sustainable harvesting of Atlantic white cedar should be consistent with the restoration and conservation of Atlantic white cedar stands. We encourage the U. S. Air Force to follow all best management practices in Atlantic white cedar harvesting and regeneration as stated in the EA. We also applaud the Dare County Range for continuing to actively manage for Atlantic white cedar on the property as it is an important and rare natural community within the state of North Carolina.

Respectfully,



Katherine D. Skinner  
Executive Director  
North Carolina Chapter of The Nature Conservancy





DEPARTMENT OF THE AIR FORCE  
4TH FIGHTER WING (ACC)  
SEYMOUR JOHNSON AIR FORCE BASE NC

AUG 18 2014

Mr. Dennis G. Goodson, P.E.  
Deputy Base Civil Engineer  
1095 Peterson Avenue  
Seymour Johnson AFB NC 27531-2355

Ms. Katherine D. Skinner  
The Nature Conservancy  
North Carolina Chapter  
334 Blackwell Street, Suite 300  
Durham, NC 27701

Dear Ms. Skinner

The 4th Civil Engineer Squadron at Seymour Johnson AFB received your letter regarding the Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the proposed Atlantic White Cedar (AWC) Restoration Project at Dare County Range. We appreciate your comments and suggestions.

Regarding your comments on conditions at the project site that impact the effectiveness of regeneration, we have found the most significant contributing element for the declining conditions to be the projected rate for the loss of cedar trees and competition from shade tolerant hardwood tree species. As individual cedar trees die, small openings in the canopy allow for shade tolerant hardwood species such as red maple and black gum to become established. The successful regeneration of surrounding AWC stands harvested during the 1980s has proven that hydrology and viability of the seed bank, while important, have much less influence as contributing factors for the effectiveness of this project.

Thank you for providing your suggestions.

Sincerely

  
DENNIS G. GOODSON, P.E.



North Carolina Department of Environment and Natural Resources  
Office of Land and Water Stewardship

Pat McCrory  
Governor

Bryan Gossage  
Director

John E. Skvarla, III  
Secretary

June 17, 2014

Mr. Dennis Goodson, P.E.  
Deputy, Base Civil Engineer  
1095 Peterson Avenue  
Seymour Johnson AFB, NC 27531-2355

Dear Mr. Goodson:

The North Carolina Natural Heritage Program appreciates the opportunity to review the Draft Environmental Assessment for a proposed Atlantic White Cedar Restoration Project at Dare County Range, North Carolina. The proposed action would include whole tree harvesting of approximately 83 acres of standing Atlantic white cedar trees. Natural regeneration would rely on the seed bank in the forest floor, supplemented by seed trees (five per acre). Once Atlantic white cedar seedlings are established, wetland-approved herbicides would be used to control competing vegetation if seedling survival was at risk. The stated purpose of the proposed action is to regenerate Atlantic white cedar stands to ensure the stands are not replaced with hardwood stands.

The North Carolina Natural Heritage Program considers this portion of Dare County Range to be a natural area, identified as part of the Alligator River Swamp Forest. It retains its natural character, and would be eligible for Registry. In regards to the natural character, the collection of Peatland Atlantic White Cedar Forests in Dare County - shared between the Dare County Range and Alligator River National Wildlife Refuge - is by far the largest occurrence of a mature example of this community, in the state and probably anywhere. No other occurrence in the state comes close to its extent of mature forest. This is despite the substantial reduction in mature forest in recent years that is due in some part to natural causes, but more to human-induced causes. The current proposal is not a large percentage of the remaining mature area, but is a substantial area, and continues the trend of loss of mature forest.

Atlantic white cedar forests have regenerated after harvesting. However, most of the white cedar forests that have been harvested did not regenerate in comparable white cedar forests. The Dare County Range has many acres of regenerating white cedar, but regeneration carries some risk. And the regenerating white cedar is many years from maturity and providing the habitat benefits of a mature forest community. The recent vegetation map of the range showed about 800 acres of mature white cedar and about 1,700 acres of regeneration, with only much smaller areas of intermediate age. The encroachment of hardwoods into the forest is of concern. However, the hardwoods can be cut or otherwise removed without removing the mature white cedar.

As noted above, the NC Natural Heritage Program would be interested in adding this natural area to the Registry. Please contact me or other NHP staff if you have any questions, or would like additional information. I can be reached at 919-707-8110.

Sincerely,

Scott Pohlman





DEPARTMENT OF THE AIR FORCE  
4TH FIGHTER WING (ACC)  
SEYMOUR JOHNSON AIR FORCE BASE NC

Mr. Dennis G. Goodson, P.E.  
Deputy Base Civil Engineer  
1095 Peterson Avenue  
Seymour Johnson AFB NC 27531-2355

AUG 16 2014

Mr. Scott Pohlman  
NC Natural Heritage Program  
1601 Mail Service Center  
Raleigh, NC 27699-1602

Dear Mr. Pohlman

The 4th Civil Engineer Squadron at Seymour Johnson AFB received your letter dated June 17, 2014 regarding the Draft Environmental Assessment and Draft Finding of No Significant Impact for the proposed Atlantic White Cedar Restoration Project at Dare County Range, NC. We appreciate your comments and suggestions.

We share your concern and interests in maintaining a viable white cedar forest as part of the Alligator River Swamp Forest. We believe our planned actions to harvest and regenerate declining mature white cedar stands will be a greater benefit to white cedar forest growth than allowing hardwoods to take over these areas. The Air Force's sustainable management policies and practices are used to maintain and produce forest products and other benefits such as quality wildlife, threatened and endangered species habitat, clean water, clean air, and outdoor recreation opportunities. The proposed harvest sites were previously included as a natural area in a Cooperative Agreement (signed 22 August 1983) and the Addendum (signed 23 April 1986) that designated three Natural Heritage Areas on the Dare County Range. During 2007, the Air Force revised the Dare County Range Integrated Natural Resources Management Plan to remove these areas of declining growth. We continue to maintain 4,628 acres in the Alligator River Swamp Forest Natural Heritage Area and 4,025 acres in the Low Pocosin Natural Heritage Area. Areas removed from the Natural Heritage Area include forest stands that were commercially logged until 1989 for Atlantic White Cedar. These areas are now managed for forest regeneration.

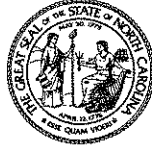
A vegetation map was completed during 2005 for the Dare County peninsula in collaboration with the U.S. Fish and Wildlife Service and Alion Science and Technology. This vegetation map was developed from aerial photography and delineates vegetation at the Alliance Level of the National Vegetation Classification System (NVCS) as specified by the Federal Geographic Data Committee (FGDC). Historical and current vegetation maps were prepared as part of a Department of Defense Legacy Resource Management Program project (Project Number 05-252) authored by Robert Mickler, Andrew Bailey, and Cecil Frost. These vegetation maps were included in the Natural Heritage Areas designation review process as the Air Force endeavors to use the "best available science" to guide the management of natural resources.

We considered your suggestion to cut or remove the encroaching hardwoods and found it not to be an achievable nor economical means to prevent the conversion of these stands to hardwood forest types within the habitat present at Dare Range. As you know, Atlantic White Cedar is a shade intolerant, pioneer species that requires large openings in the forest canopy which provide full-sunlight necessary for seed in the forest floor to germinate.

Thank you for providing comments and suggestions.

Sincerely

  
DENNIS G. GOODSON, P.E.



## North Carolina Department of Administration

Pat McCrory, Governor

Bill Daughtridge, Jr., Secretary

June 27, 2014

Ms. Cathryn Pesenti  
Department of the Air Force  
4 Civil Engineer Sq/CER  
Seymour Johnson Air Force Base  
1095 Peterson Avenue  
Goldsboro, NC 27531-2187

**Re: SCH File # 14-E-0000-0490; EA/FONSI; Proposed project is for the regeneration of 83 acres of Atlantic white cedar stands in degraded condition on the Dare County Range.**

Dear Ms. Pesenti:

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are the comments made by agencies in the course of this review.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

A handwritten signature in cursive script that reads "Crystal Best".

Crystal Best  
State Environmental Review Clearinghouse

Attachments

cc: Region R

**Mailing Address:**  
1301 Mail Service Center  
Raleigh, NC 27699-1301

**Telephone:** (919)807-2425  
Fax (919)733-9571  
State Courier #51-01-00  
e-mail [state.clearinghouse@doa.nc.gov](mailto:state.clearinghouse@doa.nc.gov)

**Location Address:**  
116 West Jones Street  
Raleigh, North Carolina



North Carolina Department of Environment and Natural Resources

Pat McCrory  
Governor

John E. Skvarla, III  
Secretary

MEMORANDUM

TO: Crystal Best  
State Clearinghouse

FROM: Lyn Hardison *Lyn*  
Division of Environmental Assistance and Customer Service  
Permit Assistance & Project Review Coordinator

RE: 14-0490  
Environmental Assessment/ Finding of No Significant Impact  
Proposed project is for the regeneration of 83 acres of Atlantic white cedar stand in  
degraded condition on the Dare County Range  
Dare County

Date: June 20, 2014

The Department of Environment and Natural Resources has completed its review of the proposal for the referenced project. Based on the information provided, our agencies have identified permits that may be required and offered some suggestions. The comments are attached for the applicant's consideration.

The Department agencies will continue to be available to assist the applicant through the environmental review and permitting processes

Thank you for the opportunity to respond.

Attachment



North Carolina Department of Environment and Natural Resources  
Office of Land and Water Stewardship

Pat McCrory  
Governor

Bryan Gossage  
Director

John E. Skvarla, III  
Secretary

June 17, 2014

Mr. Dennis Goodson, P.E.  
Deputy, Base Civil Engineer  
1095 Peterson Avenue  
Seymour Johnson AFB, NC 27531-2355

Dear Mr. Goodson:

The North Carolina Natural Heritage Program appreciates the opportunity to review the Draft Environmental Assessment for a proposed Atlantic White Cedar Restoration Project at Dare County Range, North Carolina. The proposed action would include whole tree harvesting of approximately 83 acres of standing Atlantic white cedar trees. Natural regeneration would rely on the seed bank in the forest floor, supplemented by seed trees (five per acre). Once Atlantic white cedar seedlings are established, wetland-approved herbicides would be used to control competing vegetation if seedling survival was at risk. The stated purpose of the proposed action is to regenerate Atlantic white cedar stands to ensure the stands are not replaced with hardwood stands.

The North Carolina Natural Heritage Program considers this portion of Dare County Range to be a natural area, identified as part of the Alligator River Swamp Forest. It retains its natural character, and would be eligible for Registry. In regards to the natural character, the collection of Peatland Atlantic White Cedar Forests in Dare County - shared between the Dare County Range and Alligator River National Wildlife Refuge - is by far the largest occurrence of a mature example of this community, in the state and probably anywhere. No other occurrence in the state comes close to its extent of mature forest. This is despite the substantial reduction in mature forest in recent years that is due in some part to natural causes, but more to human-induced causes. The current proposal is not a large percentage of the remaining mature area, but is a substantial area, and continues the trend of loss of mature forest.

Atlantic white cedar forests have regenerated after harvesting. However, most of the white cedar forests that have been harvested did not regenerate in comparable white cedar forests. The Dare County Range has many acres of regenerating white cedar, but regeneration carries some risk. And the regenerating white cedar is many years from maturity and providing the habitat benefits of a mature forest community. The recent vegetation map of the range showed about 800 acres of mature white cedar and about 1,700 acres of regeneration, with only much smaller areas of intermediate age. The encroachment of hardwoods into the forest is of concern. However, the hardwoods can be cut or otherwise removed without removing the mature white cedar.

As noted above, the NC Natural Heritage Program would be interested in adding this natural area to the Registry. Please contact me or other NHP staff if you have any questions, or would like additional information. I can be reached at 919-707-8110.

Sincerely,

Scott Pohlman



North Carolina Department of Environment and Natural Resources

Pat McCrory  
Governor

John E. Skvarla, III  
Secretary

TO: Lyn Hardison, Environmental Coordinator

FROM: Scott Bullock, Regional UST Supervisor JSB

COPY: Robert Davies, Corrective Action Branch Head

COPY: Kathleen Lance, Administrative Secretary

DATE: May 29, 2014

RE: Environmental Assessment/Finding of No Significant Impact – Project Number 14-0490 – Proposed project is for the regeneration of 83 acres of Atlantic white cedar stands in degraded condition on the Dare County Bombing Range in Dare County.

I searched the Petroleum Underground Storage Tank (UST) and Non-UST Databases and those databases indicated the presence of two reported petroleum releases on the Dare County Bombing Range. **However, those incidents should not pose any problems.** I reviewed the above proposal and determined that this project should not have any adverse impact upon groundwater. The following comments are pertinent to my review:

1. The Washington Regional Office (WaRO) UST Section recommends removal of any abandoned or out-of-use petroleum USTs or petroleum above ground storage tanks (ASTs) within the project area. The UST Section should be contacted regarding use of any proposed or on-site petroleum USTs or ASTs. We may be reached at (252) 946-6481.
2. Any petroleum USTs or ASTs must be installed and maintained in accordance with applicable local, state, and federal regulations. For additional information on petroleum ASTs it is advisable that the North Carolina Department of Insurance at (919) 661-5880 ext. 239, USEPA (404) 562-8761, local fire department, and Local Building Inspectors be contacted.
3. Any petroleum spills must be contained and the area of impact must be properly restored. Petroleum spills of significant quantity must be reported to the North Carolina Department of Environment & Natural Resources – Division of Waste Management Underground Storage Tank Section in the Washington Regional Office at (252) 946-6481.
4. Any soils excavated during demolition or construction that show evidence of petroleum contamination, such as stained soil, odors, or free product must be reported immediately to the local Fire Marshall to determine whether explosion or inhalation hazards exist. Also, notify the UST Section of the Washington Regional Office at (252) 946-6481. Petroleum contaminated soils must be handled in accordance with all applicable regulations.
5. Any questions or concerns regarding spills from petroleum USTs, ASTs, or vehicles should be directed to the UST Section at (252) 946-6481.

If you have any questions or need additional information, please contact me at 252-948-3906.



**INTERGOVERNMENTAL REVIEW - PROJECT COMMENTS**

Project Number: 14-0490 Due Date: 6-18-14

After review of this project it has been determined that the ENR permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law. Questions regarding these permits should be addressed to the Regional Office indicated on the reverse of the form. All applications, information and guidelines relative to these plans and permits are available from the same Regional Office.

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
<input type="checkbox"/>	Permit to construct & operate wastewater treatment facilities, sewer system extensions & sewer systems not discharging into state surface waters.	Application 90 days before begin construction or award of construction contracts. On-site inspection. Post-application technical conference usual.	30 days (90 days)
<input type="checkbox"/>	NPDES - permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters.	Application 180 days before begin activity. On-site inspection. Pre-application conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit-whichever is later.	90-120 days (N/A)
<input type="checkbox"/>	Water Use Permit	Pre-application technical conference usually necessary	30 days (N/A)
<input type="checkbox"/>	Well Construction Permit	Complete application must be received and permit issued prior to the installation of a well.	7 days (15 days)
<input type="checkbox"/>	Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site inspection. Pre-application conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
<input type="checkbox"/>	Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q.0100 thru 2Q.0300)	Application must be submitted and permit received prior to construction and operation of the source. If a permit is required in an area without local zoning, then there are additional requirements and timelines (2Q.0113).	90 days
<input type="checkbox"/>	Permit to construct & operate Transportation Facility as per 15 A NCAC (2D.0800, 2Q.0601)	Application must be submitted at least 90 days prior to construction or modification of the source.	90 days
<input checked="" type="checkbox"/>	Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900	N/A	60 days (90 days)
<input type="checkbox"/>	Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 20.1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-707-5950.		
<input type="checkbox"/>	Complex Source Permit required under 15 A NCAC 2D.0800		
<input type="checkbox"/>	The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres to be disturbed. Plan filed with proper Regional Office (Land Quality Section) At least 30 days before beginning activity. A fee of \$65 for the first acre or any part of an acre. An express review option is available with additional fees.		20 days (30 days)
<input type="checkbox"/>	Sedimentation and erosion control must be addressed in accordance with NCDOT's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable stormwater conveyances and outlets.		(30 days)
<input type="checkbox"/>	Mining Permit	On-site inspection usual. Surety bond filed with ENR Bond amount varies with type mine and number of acres of affected land. Any acre mined greater than one acre must be permitted. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
<input type="checkbox"/>	North Carolina Burning permit	On-site inspection by N.C. Division Forest Resources if permit exceeds 4 days	1 day (N/A)
<input type="checkbox"/>	Special Ground Clearance Burning Permit - 22 counties in coastal N.C. with organic soils	On-site inspection by N.C. Division Forest Resources required "if more than five acres of ground clearing activities are involved. Inspections should be requested at least ten days before actual burn is planned."	1 day (N/A)
<input type="checkbox"/>	Oil Refining Facilities	N/A	90-120 days (N/A)
<input type="checkbox"/>	Dam Safety Permit	If permit required, application 60 days before begin construction. Applicant must hire N.C. qualified engineer to: prepare plans, inspect construction, certify construction is according to ENR approved plans. May also require permit under mosquito control program. And a 404 permit from Corps of Engineers. An inspection of site is necessary to verify Hazard Classification. A minimum fee of \$200.00 must accompany the application. An additional processing fee based on a percentage of the total project cost will be required upon completion.	30 days (60 days)

PERMITS		SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
<input type="checkbox"/>	Permit to drill exploratory oil or gas well	File surety bond of \$5,000 with ENR running to State of NC conditional that any well opened by drill operator shall, upon abandonment, be plugged according to ENR rules and regulations.	10 days N/A
<input type="checkbox"/>	Geophysical Exploration Permit	Application filed with ENR at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days N/A
<input type="checkbox"/>	State Lakes Construction Permit	Application fee is charged based on structure size. Must include descriptions & drawings of structure & proof of ownership of riparian property.	15-20 days N/A
<input type="checkbox"/>	401 Water Quality Certification	N/A	60 days (130 days)
<input type="checkbox"/>	CAMA Permit for MAJOR development	\$250.00 fee must accompany application	55 days (150 days)
<input type="checkbox"/>	CAMA Permit for MINOR development	\$50.00 fee must accompany application	22 days (25 days)
<input type="checkbox"/>	Several geodetic monuments are located in or near the project area. If any monument needs to be moved or destroyed, please notify: N.C. Geodetic Survey, Box 27687 Raleigh, NC 27611		
<input checked="" type="checkbox"/>	Abandonment of any wells, if required must be in accordance with Title 15A, Subchapter 2C.0100.		
<input type="checkbox"/>	Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.		
<input type="checkbox"/>	Compliance with 15A NCAC 2H 1000 (Coastal Stormwater Rules) is required.		45 days (N/A)
<input type="checkbox"/>	Tar Pamlico or Neuse Riparian Buffer Rules required.		
<input type="checkbox"/>	Plans and specifications for the construction, expansion, or alteration of a public water system must be approved by the Division of Water Resources/Public Water Supply Section prior to the award of a contract or the initiation of construction as per 15A NCAC 18C .0300 et. seq. Plans and specifications should be submitted to 1634 Mail Service Center, Raleigh, North Carolina 27699-1634. All public water supply systems must comply with state and federal drinking water monitoring requirements. For more information, contact the Public Water Supply Section, (919) 707-9100.		30 days
<input type="checkbox"/>	If existing water lines will be relocated during the construction, plans for the water line relocation must be submitted to the Division of Water Resources/Public Water Supply Section at 1634 Mail Service Center, Raleigh, North Carolina 27699-1634. For more information, contact the Public Water Supply Section, (919) 707-9100.		30 days
* Other comments (attach additional pages as necessary, being certain to cite comment authority)			

### REGIONAL OFFICES

Questions regarding these permits should be addressed to the Regional Office marked below.

#### Asheville Regional Office

2090 US Highway 70  
Swannanoa, NC 28778  
(828) 296-4500

#### Mooreville Regional Office

610 East Center Avenue, Suite 301  
Mooreville, NC 28115  
(704) 663-1699

#### Wilmington Regional Office

127 Cardinal Drive Extension  
Wilmington, NC 28405  
(910) 796-7215

#### Fayetteville Regional Office

225 North Green Street, Suite 714  
Fayetteville, NC 28301-5043  
(910) 433-3300

#### Raleigh Regional Office

3800 Barrett Drive, Suite 101  
Raleigh, NC 27609  
(919) 791-4200

#### Winston-Salem Regional Office

585 Woughtown Street  
Winston-Salem, NC 27107  
(336) 771-5000

#### ✓ Washington Regional Office

943 Washington Square Mall  
Washington, NC 27889  
(252) 946-6481

Hardison, Lyn

---

**From:** Scarbraugh, Anthony  
**Sent:** Monday, June 09, 2014 8:08 AM  
**To:** Roddy, Jackie; Brady, Harold M.  
**Cc:** Hardison, Lyn; Tankard, Robert  
**Subject:** 14-0490

Based on a review of the proposed project for the regeneration of 83 acres of Atlantic white cedar stands in a degraded condition on the Dare County Bombing Range in Dare County, the forestry operations will be conducted under the silviculture exemption and the necessary Forest Practice Guidelines will be followed. Therefore, no anticipated impacts on wetlands or surface waters that are subject to 401 or isolated wetland regulations should occur. Should this change during the implementation of the proposed project this Office should be contacted immediately. If you should have any questions or require additional information, you may e-mail me at [anthony.scarbraugh@ncdenr.gov](mailto:anthony.scarbraugh@ncdenr.gov) or contact me by phone at 252-948-3924.

Thanks,  
Anthony Scarbraugh

Anthony Scarbraugh  
Environmental Senior Specialist  
Washington Regional Office  
North Carolina Department of Environment and Natural Resources  
Division of Water Resources – Water Quality Regional Operations Section  
943 Washington Square Mall  
Washington, NC 27889  
(252) 948-3924

\*\*\*\*\*  
E-mail correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties unless the content is exempt by statute or other regulation.  
\*\*\*\*\*

# Don't Burn!

*Smoke from Outdoor Fires  
is Unhealthy to Breathe and  
Pollutes the Air*



There are a lot of misunderstandings about outdoor or open burning in North Carolina. Some people think it's OK to burn trash in barrels because they've always done it that way. It's not. Others think it's always OK to burn leaves and branches in the fall. But that's not so in cities and counties that pick up yard waste.

The N.C. Division of Air Quality enforces the state open burning rules and many local governments have additional restrictions on outdoor fires. Violating these rules can be expensive -- with fines as high as \$25,000 or more for serious cases or repeat violations.



## If It Doesn't Grow, Don't Burn It

The basic message of the state open burning rule is simple: Only leaves, branches and other plant growth can be burned -- nothing else. That means no trash, lumber, tires or old newspapers. If local pickup is available, you can't burn even leaves and branches. Do not burn:

- Garbage, paper and cardboard
- Tires and other rubber products
- Building materials, including lumber and wood scraps
- Wire, plastics and synthetic materials
- Asphalt shingles and heavy oils
- Paints, household and agricultural chemicals
- Buildings, mobile homes and other structures
- Anything when the air quality forecast is Code Orange, Red or Purple

What is allowed under the law? Homeowners can burn yard trimmings if it's allowed under local ordinances, no public pickup is available and it doesn't cause a public nuisance. Yard waste must not include logs more than 6 inches in diameter and stumps. Other allowable burning includes campfires, outdoor barbecues and bonfires for festive occasions. Landowners or contractors also can burn vegetation to clear land or rights-of-way, provided that:

- Burning is done on the site of origin.
- Prevailing winds are away from built-up areas and roads. If winds are blowing towards public roads, fires must be at least 250 feet away.
- Fires are at least 500 feet away from occupied buildings.
- Burning is done between 8 a.m. and 6 p.m., and nothing is added outside of these hours.

Other occasions where open burning is allowed -- with DAQ approval -- include fires for: training fire-fighting personnel; managing forest lands or wildlife habitats; controlling agricultural diseases and pests; and disposing of materials generated by hurricanes, tornadoes and other natural disasters. You may need a permit from the N.C. Forest Service or local governments before you burn, even for allowable purposes. However, such permits do not excuse a person from following the DAQ's open-burning rules.

## Smoke Can Hurt You and Others

Why does the state have such strict rules about open burning? Because smoke and soot from outdoor fires can cause serious health problems and pollute the air. Fires also can burn out of control, destroying forests and burning down homes. Smoke from a burning trash pile contains many pollutants that can cause serious health problems and damage the environment.

Although smoke from a fire may not bother you, it could be a nuisance and serious health threat for your neighbors, particularly if they have respiratory conditions such as asthma or emphysema. Potential health effects include: lung and eye irritation, headaches, dizziness, asthma attacks, coughing and even death. For more information on the health effects of pollution from open burning, see the U.S. Environmental Protection Agency's Web site, [www.epa.gov/](http://www.epa.gov/), and do a word search for "open burning."

Do not burn on "Air Quality Action Days," when forecasts are Code Orange, Red or Purple. For air quality forecasts, go to [www.ncair.org](http://www.ncair.org) or call 1(888) 784-6224.

## Reduce, Reuse, Recycle

A lot of open burning isn't necessary. Brush can be composted, ground up for mulch, piled up for wildlife, or just left to rot. Newspapers can be recycled. Old attic junk can be given away for someone else to reuse. By making a few sensible choices, you can reduce the amount of throw-away material you create in the first place. The possibilities are endless.

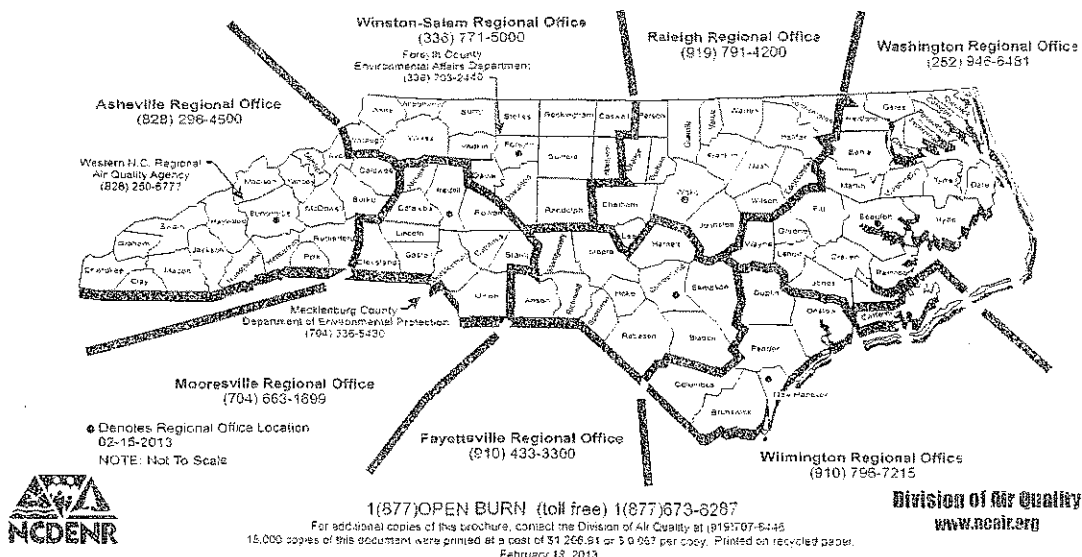
Take a look at what you've decided to burn. Isn't there something else you can do with it? For more information about reducing, reusing or recycling waste, contact the Division of Environmental Assistance and Outreach at 1(877) 623-6748 or [www.ncenvironmentalassistance.org](http://www.ncenvironmentalassistance.org)

## Plan Ahead

You don't need a special permit from the Division of Air Quality for allowable fires. However, you may need a permit from your town or local forest ranger. Open burning can be a nuisance, and local officials may establish rules to reduce that nuisance. Check with local officials before you burn.

Open burning more than 100 feet from your home and within 500 feet of a woodland normally requires a permit from the N.C. Forest Service. The service does not charge for permits. If you want to start an outdoor fire, contact a local forest ranger to find out if and how you can get a permit. You also may contact the Forest Service headquarters at (919) 857-4801 or visit its website, [www.ncforestservice.gov/](http://www.ncforestservice.gov/). The service is primarily concerned with fire danger, while the DAQ deals with air pollution. Following one agency's regulations does not guarantee compliance with other agencies.

The N.C. Division of Air Quality is part of the N.C. Department of Environment and Natural Resources. The DAQ is responsible for maintaining and improving the quality of North Carolina's air. For more information about the division and laws for protecting air quality, visit the DAQ's website [www.ncair.org](http://www.ncair.org) or call one of our regional offices shown below.

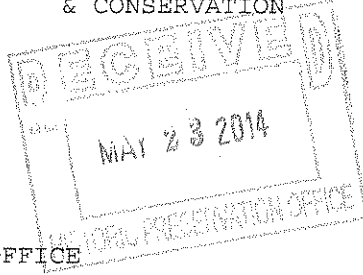


NORTH CAROLINA STATE CLEARINGHOUSE  
DEPARTMENT OF ADMINISTRATION  
INTERGOVERNMENTAL REVIEW

COUNTY: DARE

H09: FORESTRY/TIMBER DEVELOPMENT  
& CONSERVATION

STATE NUMBER: 14-E-0000-0490  
DATE RECEIVED: 05/22/2014  
AGENCY RESPONSE: 06/18/2014  
REVIEW CLOSED: 06/23/2014



MS RENEE GLEDHILL-EARLEY  
CLEARINGHOUSE COORDINATOR  
DEPT OF CULTURAL RESOURCES  
STATE HISTORIC PRESERVATION OFFICE  
MSC 4617 - ARCHIVES BUILDING  
RALEIGH NC

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DENR - COASTAL MGT  
DENR LEGISLATIVE AFFAIRS  
DEPT OF AGRICULTURE  
DEPT OF CULTURAL RESOURCES  
DEPT OF TRANSPORTATION

PROJECT INFORMATION

APPLICANT: Department of the Air Force  
TYPE: National Environmental Policy Act  
Environmental Assessment/Finding of No Significant Impact

DESC: Proposed project is for the regeneration of 83 acres of Atlantic white cedar stands in degraded condition on the Dare County Range.

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: ☒ NO COMMENT ☐ COMMENTS ATTACHED

SIGNED BY:

Renee Gledhill-Earley

DATE:

6.5.14



MAY 27 2014

NORTH CAROLINA STATE CLEARINGHOUSE  
DEPARTMENT OF ADMINISTRATION  
INTERGOVERNMENTAL REVIEW

SCR-11-081

COUNTY: DARE

H09: FORESTRY/TIMBER DEVELOPMENT  
& CONSERVATION

STATE NUMBER: 14-E-0000-0490  
DATE RECEIVED: 05/22/2014  
AGENCY RESPONSE: 06/18/2014  
REVIEW CLOSED: 06/23/2014

MS ELIZABETH HEATH  
CLEARINGHOUSE COORDINATOR  
DEPT OF AGRICULTURE  
1001 MSC - AGRICULTURE BLDG  
RALEIGH NC

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AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: ☒ NO COMMENT ☐ COMMENTS ATTACHED

SIGNED BY:

  
Keith Larick

DATE:

6/4/2014



NORTH CAROLINA STATE CLEARINGHOUSE  
DEPARTMENT OF ADMINISTRATION  
INTERGOVERNMENTAL REVIEW

*Nazim Sarker*

COUNTY: DARE

H09: FORESTRY/TIMBER DEVELOPMENT  
& CONSERVATION

STATE NUMBER: 14-E-0000-0490  
DATE RECEIVED: 05/22/2014  
AGENCY RESPONSE: 06/18/2014  
REVIEW CLOSED: 06/23/2014

MS CARRIE ATKINSON  
CLEARINGHOUSE COORDINATOR  
DEPT OF TRANSPORTATION  
STATEWIDE PLANNING - MSC #1554  
RALEIGH NC

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AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: ☒ NO COMMENT ☐ COMMENTS ATTACHED

SIGNED BY: *[Signature]*

DATE: 5-28-2014





NORTH CAROLINA STATE CLEARINGHOUSE  
DEPARTMENT OF ADMINISTRATION  
INTERGOVERNMENTAL REVIEW

COUNTY: DARE

H09: FORESTRY/TIMBER DEVELOPMENT  
& CONSERVATION

STATE NUMBER: 14-E-0000-0490  
DATE RECEIVED: 05/22/2014  
AGENCY RESPONSE: 06/18/2014  
REVIEW CLOSED: 06/23/2014

MS CAROLYN PENNY  
CLEARINGHOUSE COORDINATOR  
CC&PS - DIV OF EMERGENCY MANAGEMENT  
FLOODPLAIN MANAGEMENT PROGRAM  
MSC # 4719  
RALEIGH NC

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MAY 22, 2014

REVIEW DISTRIBUTION

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DENR - COASTAL MGT  
DENR LEGISLATIVE AFFAIRS  
DEPT OF AGRICULTURE  
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SIGNED BY:

*Carol Penny*

DATE:

*5/29/14*

